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INTRODUCTION OF INNOVATIVE CREATIVE PEDAGOGICAL TECHNOLOGY IN THE EDUCATIONAL PROCESS OF GYNECOLOGY

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pedotechnology, scientists offer different grounds: consistency, integrativity, reproducibility, motivation, novelty,

ABSTRACT

In many international publications devoted to pedagogical technology, one can find such an understanding of it: "pedagogical technology is not just the use of technical means of teaching or computers; it is the identification of principles and the development of methods for optimizing the educational process by analyzing factors that increase educational efficiency, by designing and applying techniques and materials, as well as by evaluating the methods used" The essence of this approach lies in the idea of full controllability of the work of an institute or other educational institution.

Relevance: In many international publications devoted to pedagogical technology, one can find such an understanding of it: "pedagogical technology is not just the use of technical means of teaching or computers; it is the identification of principles and the development of methods for optimizing the educational process by analyzing factors that increase educational efficiency, by designing and applying techniques and materials, as well as by evaluating the methods used" The essence of this approach lies in the idea of full controllability of the work of an institute or other educational institution. According to the characteristics of the Japanese scientist and teacher T. Sakamoto, pedagogical technology is the introduction of a

systematic way of thinking into pedagogy, which can otherwise be called "systematization of education" The task of our research was to search for evidence of the productivity of creative technologies in the successful modernization of medical education. Science and practice need to solve this problem, but so far even the concept of "creative technology" is not a generally accepted and unambiguously understood concept. In the process of learning, technology is understood as the technological process of implementing educational activities, a model of interaction between participants in the educational process. Traditional pedagogical technology is "a set of psychological and pedagogical attitudes that determine the social set and layout of forms, methods, methods, teaching



methods, educational tools; it is the tools of the pedagogical process" (B. T. Likhachev). M. V. Clarin considers technology through a system: pedagogical technology is "the system totality and the order of functioning of all personal, instrumental and methodological means used to achieve pedagogical goals." Pedagogical science, in response to the demands of society and the state, is actively looking for ways to achieve high results. Hundreds of methods, techniques, pedagogical findings are described, but they do not provide a goal. The construction of the pedagogical process in accordance with a specific goal and the indispensable receipt of a positive result led to the discovery of such an algorithm as technology. The presence of a result is a component that does not cause doubts in the research community. But as the main characteristics of pedotechnology, scientists offer different grounds: consistency, integrativity, reproducibility, motivation, novelty, the possibility of repetition, adaptation in new conditions, etc. According to T. S. Anisimova, means of control are an obligatory component of educational technology, along with motivation, diagnostics, algorithmicity. N. V. Anikina believes that educational technology is a targeted application of a system of means aimed at and determining the receipt of specified characteristics of some educational phenomenon. Technologies can ensure the productivity of a mega-level, macro-level, micro-level education strategy. Many researchers understand technology as a didactic system (forms, methods, means of teaching algorithmically organized and having a very specific result in the implementation of the content of learning). V. P. Bespalko

considers technology to be the embodiment of the art of a teacher in pedagogical activity. The description of a new, creative process that accompanies pedagogical activity and transforms the teacher's material into the possibility of replication, transfer to other conditions with a given result is a creative technology. The word "techne" means art, that is, what the teacher owns. "Logos" in translation means teaching. That is, we can talk about technology as the art of teaching, pedagogical skill, where the learning process has become the unity of science and creativity, the art of the teacher. Technologies may not originate in the educational sector, but their skillful adaptation in education, the use of the experience of other industries, contribute to the enrichment of pedagogical science and educational practice. In technical systems, the experience of technologies has been formed, the development of which takes place in accordance with the laws of dialectics. In pedagogy, the effect of these laws is adapted through the intellectual and psychological characteristics of the teacher. However, laws and features can be identified, learned and implemented in the creation of technologies. Active creative activity in the technologization of education ensures the transition to the implementation of a new paradigm, productivity, creative technologies. In this regard, we believe that pedagogical technology, the content of its concepts, the design algorithm, the result should acquire creative features in order to meet the requirements of modernization of education. This technology makes it possible to make the transition from traditional education to the preparation of a creative personality. To do this, the



conditions, mechanisms and resources that ensure the creativity of a teacher capable of creating and mastering such technologies must change. The goals of education will change from the transfer of ZUN to the formation of readiness for self-knowledge, the essence of education, from the comprehension of well-known patterns, should move into building a world in one's own consciousness, active awareness of oneself in culture, reproductive technologies should be replaced by active, creative ones. We investigated the differences between traditional pedagogical technology and creative technology Types of classes using a creative approach: 1. A lesson with an invitation from a practicing specialist from the field of the subject being studied (for example, when studying topic No. 5 HIV infection, an invitation from a specialist from the Republican AIDS Center) is a form of training that allows students to get closer to the upcoming profession as future specialists. The addition of multimedia slide presentations with materials from WHO, CDC, using slides in English; the use of fragments of video films orient students to their future profession. Advantages: - shows the visibility of the features of the acquired specialty - develops the cognitive abilities of students: attention, observation, thinking, imagination. Disadvantages: - require a lot of preparation- - it is desirable to simultaneously attract a large number of students. 2. Field classes, at the bases of the department, with the involvement of a specialist working in it (for example, when studying the topic of diseases occurring with exanthemes, field classes in the maternity complex, where specialized patients are on inpatient treatment) is an

organizational form of training that allows studying various topics, symptoms and syndromes based on their observation in vivo. Advantages: - establishes a direct and more effective connection of learning with life and the upcoming profession; - affects the emotional sphere; - serves the development of imagination, attention, thinking, speech and memory of students. Disadvantages: - with a significant amount of time spent at the preparatory stage, the relatively small allotted time for independent curation of patients. 3. The lesson-conference is the pedagogical interaction of the teacher and students with maximum independence, activity, initiative of the latter. The conference is usually held with several study groups, under the guidance of their teachers and is aimed at expanding, consolidating and improving knowledge. It is possible to hold a mini-conference within one study group, in this case there is only one leader. Advantages: - develops the creative search of students and teachers; - develops the intellectual abilities of students; - stimulates students' interest in their chosen profession; - develops the ability to work with literature; - promotes the acquisition of the skill to analyze and summarize the results; - free discussion of problematic issues; - the ability to speak to an audience, to present the material competently, forms the ability to identify essential features and properties and convey them to listeners. After distinguishing between the two technologies, we came to the following conclusion. The first reaction of the teacher may well be a complete rejection, rejection of creativity and an innovative approach: this is unrealistic and does not make sense. Let's try to give a kind of "proof against the



contrary". You should immediately pay attention to the fact that in the course of a traditionally conducted lesson there are many difficult moments. The "old", traditional technique is increasingly failing. It is not easy to effectively counter this. So why not look for an alternative? We bring to your attention an example that clearly shows the possibilities of the technology of creativity in teaching a complex and meaningful medical discipline - infectious diseases. Gynecology is an objectively difficult subject, especially for 5th and 6th year students of the Faculty of Medicine. The teacher has to face numerous difficulties and make considerable efforts to achieve very modest results. The main problem, perhaps, is that the study of this discipline with a small number of academic hours involves a large amount of

independent work of students with literature. And these are, as a rule, "heavy" special texts, scientific articles and monographs. When faced with difficulties, some students simply "give up". Others, without even trying to understand, to understand the topic under study, are limited to simple unintelligent memorization (that is, "memorization"). A teacher in such a situation has only to dream about improving the quality of education. When traditional education is so difficult, not every teacher will decide to experiment. First of all, because of the fear that the innovation, which provides students with more "freedom" and independence, will lead to a decrease in the requirements for their knowledge and skills, a drop in discipline in the classroom.

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ИНТЕРПРЕТАЦИЯ ЛАБОРАТОРНЫХ ДАННЫХ В АКУШЕРСТВЕ ПРИ ПАТОЛОГИИ ОКОЛОПЛОДНЫХ ВОД

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КЛЮЧЕВЫЕ СЛОВА

беременность,
многоводие,
аутоантитела к
нативной ДНК,
акушерские осложнения.

АННОТАЦИЯ

Многоводия остается актуальной проблемой современного акушерства, так как является одной из ведущих причин репродуктивных потерь. Цель исследования: оценка состояния аутоантител (ААТ) класса G (IgG) к нативной двухцепочечной (ДНК-DS) в сыворотке крови у беременных с многоводием. Материал и методы. Обследовано 67 беременных в возрасте от 19 лет до 41 года. Клинико-лабораторные исследования показали, что среди 67 беременных многоводие диагностировалось у 21, что составило 31,3%. Результаты исследования показали, анализ полученных результатов показывает, что при многоводии отмечается повышение концентрации ААТ класса G к нативной двух цепочечной ДНК, что составило 47,6% случаев.

Многоводия остается актуальной проблемой современного акушерства, так как является одной из ведущих причин репродуктивных потерь. В акушерской практике данная патология встречается в 0,12%-6% случаев. Одной из актуальных проблем современного здравоохранения является антенатальная профилактика, снижение перинатальной заболеваемости и смертности. В решении этой проблемы важное значение занимает диагностика

и своевременная терапия осложнений во время беременности, отрицательно влияющих как на состояние матери, так и на развитие детей [1, 3, 4]

Многоводие осложняет течение беременности (не вынашивание, преждевременная отслойка нормально расположенной плаценты, хроническая гипоксия и антенатальная смерть плода и др.), родов (дородовое и раннее излитие околоплодных вод, аномалии родовой деятельности, гипоксия и



интранатальная смерть плода, кровотечения и др.) и послеродового периода (субинволюция матки, эндометрит и др.)» создает угрозу для внутриутробного пациента [1, 2, 3].

Цель исследования явилось оценка состояние аутоантител класса IgG к нативной двухцепочечной в сыворотке крови у беременных с многоводием.

Материал и методы. Обследовано 67 беременных в возрасте от 19 лет до 41 года. У всех беременных проводились клинические, клинико-лабораторные, инструментальные и функциональные (УЗИ) исследования. Диагноз многоводие устанавливался на основании клинико-лабораторных и функциональных исследований. Определения уровня ААТ класса IgG к

нативной двухцепочечной (ДНК –DS) ДНК в сыворотке крови определяли методом твердофазного ИФА – исследования (фирма «Вектор-Бест»). Все беременные консультированы смежными специалистами: терапевтом, эндокринологом и др. Статистические результаты исследования статистически обрабатывали с помощью стандартных методов вариационной статистики с применением t-критерия Стьюдента по прикладной программе «Excel-Office-2010» на компьютере Pentium IV.

Результаты исследования: Клинико-лабораторные исследования показали, что среди n=67 беременных многоводие диагностировалось у n=21, что составило 31,3% (рис. 1).

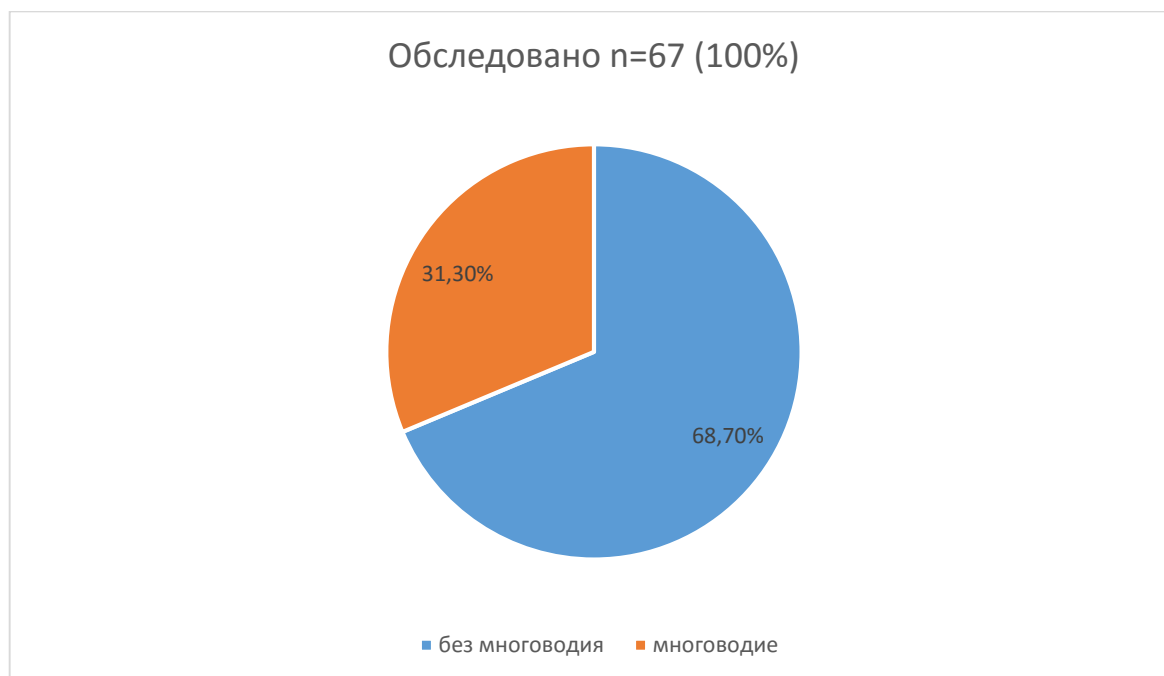


Рис. 1. Показатель выявляемости многоводия у обследованных беременных.



Результаты ИФА исследования аутоантител в сыворотке крови у беременных показало, что среди 67 беременных у 19 беременных в сыворотке крови отмечалась повышения уровня ААТ к нативной двух цепочечной ДНК, что составило 28,4% случаев.

Тогда как в группе беременных с многоводием ААТ к ДНК - DS выявлена у 10 беременных из 21, что составило 47,6% случаев. Тогда как в группе беременных без многоводия ААТ к ДНК – DS – выявлена у 9 пациенток, что составило 20% случаев соответственно.

Полученные результаты свидетельствует о том, что у беременных с многоводием отмечается повышенная частота выявляемости аутоантител к ДНК-DS в 2,4 раза по сравнению с показателями беременных без многоводия, что обуславливает риск развития аутоиммунного процесса в организме.

Анализ клинического течения многоводия с учетом концентрации аутоантител показал, что в 60% случаев процесс имел острый характер. Так в группе беременных с повышенной концентрацией ААТ к ДНК-DS у 3 отмечали гипертоническую болезнь, у 1 – гломерулонефрит.

Заключение. Таким образом, анализ полученных результатов показывает, что при многоводии отмечается повышение концентрации ААТ класса G к нативной двух цепочечной ДНК, что составило 47,6% случаев. Полученные результаты свидетельствует о том, что у беременных с многоводием отмечается повышенная частота выявляемости аутоантител к ДНК-DS в 1,7 раз по сравнению с показателями беременных без многоводия, что обуславливает риск развития аутоиммунного процесса в организме.

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ОСОБЕННОСТИ АНЕСТЕЗИОЛОГИЧЕСКОГО ОБЕСПЕЧЕНИЯ ПАЦИЕНТОВ С ТЯЖЕЛОЙ ШЕЙНОЙ КОНТРАКТУРОЙ ПРИ ЗАТРУДНЕННОМ ДЫХАНИИ

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АННОТАЦИЯ

Управление проходимостью дыхательных путей - сложная задача для анестезиолога из-за фиксированной деформации сгибания, что приводит к несовпадению плоскостей полости рта, глотки и гортани при интубации. Овассипиан фиброоптический интубационный воздуховод, интубатор воздуховод Виллиама и ротоглоточный воздуховод Бермена могут обеспечить канал для бронхоскопа. Мы представляем успешное анестезиологическое обеспечение пациента с облитерацией носовых ходов, микростомией и сильно ограниченным разгибанием шеи вследствие обширных келлоидных рубцов, выполнив оральную фиброоптическую интубацию в сознанию при помощи воздуховода Бермена.

Введение

Обеспечение проходимости дыхательных путей у пациентов с ожогами ротовой полости и шеи часто является проблемой для анестезиолога. Ограниченное открывание рта, уменьшение ротоглоточного пространства, ограниченное разгибание атланта-затылочного сустава, снижение податливости подчелюстного пространства и рубцовые изменения кожи шеи неизбежно приводят к затруднению проходимости дыхательных путей [1]. Контрактура шеи, микростомия и фиброз носа - следствие заживления ожоговых ран этих областей. Эти пациенты обычно обращаются в больницу для устранения контрактур. Обеспечение проходимости

дыхательных путей для хирургической операции в этой ситуации является проблемой для анестезиолога из-за фиксированной деформации сгибания, приводящей к несовпадению плоскостей полости рта, глотки и гортани при интубации. Таких пациентов обычно лечат по сложной схеме в зависимости от проходимости дыхательных путей [2]. Важно подчеркнуть тот факт, что основная ценность анестезиологического обеспечения включает не только технологии и процедуры, используемые анестезиологами, но также роль анестезиологов в административной и организационной поддержке оказания медицинской помощи [3]. Мы представляем успешное



анестезиологическое лечение пациента с послеожоговыми облитерациями носовых ходов, микростомией и сильно ограниченным разгибанием шеи с помощью пероральной фиброоптической интубации в бодрствующем состоянии с помощью проходимости воздуховод Бермена. Управление проходимостью дыхательных путей у таких пациентов до сих пор остается предметом разногласий. История болезни

26-летнему мужчине ASA I с историей ожога пламенем была назначена коррекция микростомии, снятие контрактуры шеи и пересадка кожи. 5 месяцев назад он получил серьезные ожоги ротовой полости и шеи. При осмотре обнаружена микростомия, размер рта всего 7 мм. Ожоги также затронули глаз и нос. Был фиброз и облитерация носовых ходов. У него был тяжелый фиброз переднего отдела шеи с фиксированной деформацией сгибания.

Обследование

Степень трудности предстоящей интубации трахеи по Маллампасти не могла быть определена из-за ограниченного открывания рта и согнутой шеи. Рентгенография шеи свидетельствовала о уменьшении ротоглоточного пространства.

Предоперационная подготовка

Перед операцией пациента на операцию была проведена тщательная предоперационная подготовка, включая установку сложного оборудования для

прохождения дыхательных путей, включая стилет, лицевую маску разных размеров, оральные и носоглоточные дыхательные пути, различные размеры эндотрахеальных трубок, ларингоскопических клинов Macintosh и McCoу, ларингеальной маски (ЛМА), волоконно-оптический бронхоскоп и набор для трахеостомии.

Анестезиологическое обеспечение

Нашей первой попыткой была оральная фиброоптическая бронхоскопия (ФОБ) в бодрствующем состоянии с интубацией через дыхательные пути Бермена. Альтернативный план заключался в хирургическом устранении контрактуры и коррекции микростомии под внутривенной кетаминевой анестезией с последующей интубацией методом прямой ларингоскопии или введением ЛМА, если интубация ФОБ не удалась. В операционной осуществляли венозный доступ с помощью периферический канюли №18. Были размещены все приборы контроля, в том числе непрерывная электрокардиография, неинвазивная манжета для измерения артериального давления. Исходное артериальное давление, частота сердечных сокращений, частота дыхания и сатурация SpO₂ составляла 110/60 мм рт. ст., 98 уд / мин, 18 / мин и 97% соответственно. В премедикации - атропин сульфат. Орофарингеальные дыхательные пути анестезировали полосканием горла и спреем 10% раствора лидокаина. Армированную эндотрахеальную трубку диаметром 6,5 мм устанавливали на фиброскоп для



взрослых. Мы ввели размер № 9 воздуховод Бермена через узкое ротовое отверстие. ФОБ был проведен через данный воздуховод и 2 мл 2% лидокаина были введены через ФОБ в области голосовой связке. Интубация была проведена впоследствии без каких-либо затруднений. Положение трубки было подтверждено, зафиксировано и закреплено. В дальнейшем анестезия поддерживалась кислородно-изофлюрановой смесью. Внутривенно фентанил (100 мкг) использовался для обеспечения интраоперационной анальгезии. ИВЛ в режиме нормокарбии. Интраоперационный период протекал без осложнений. После восстановления сознания, спонтанного хорошего мышечного тонуса больных экстубирован. Гемодинамические показатели были достаточно стабильными, дыхательных нарушений не наблюдалось. С целью обеспечения комфорта проводили седацию дормикумом, общий расход которого не превышал 5 мг за операцию.

Пациент был переведен в палату после наблюдения в течение 4 часов в палате восстановления. Его дальнейшее пребывание в больнице прошло без осложнений, и через 6 дней его выписали домой.

Обсуждение

Постожоговая контрактура шеи с фиксированной деформацией сгибания представляет собой серьезную проблему для анестезиолога. Причины трудной интубации трахеи можно разделить на четыре основные категории: ограниченное ротоглоточное пространство, уменьшение глоточного пространства, уменьшение атланто-

затылочного разгибания и снижение поднижнечелюстной податливости. Уменьшение ротоглоточного пространства или сжатие рта из-за ожоговых из-за ожогов может ограничить пространство для визуализации при прямой ларингоскопии. Это способствует невозможности совмещения оральной и глоточной осей [4]. В таких случаях доступны различные варианты интубации: фиброоптическая интубация в сознании, ЛМА, слепая назальная интубация, ретроградная интубация, трахеостомия. Использование фиброоптической интубации является золотым стандартом по сравнению с другими методами [2,5]. В нашем случае ЛМА были невозможны из-за чрезвычайно ограниченного открывания рта. Этому пациенту не подходила трахеостомия из-за фиброзных структур шеи и потери анатомического ориентира [1]. Ларингоскоп Буллара - еще одна подходящая альтернатива в такой ситуации, но его использование было поставлено под сомнение, как сложное в эксплуатации и дорогое [6]. Его использование было исключено из-за отсутствия этого инструмента. У пациента была микростомия и фиброз двусторонних ноздрей, что сделало управление дыхательными путями еще более проблематичным и сложным. Назальный путь фиброоптики обычно считается более легким, поскольку угол кривизны эндотрахеальной трубки естественным образом приближается к углу кривизны верхних дыхательных путей [1,7].

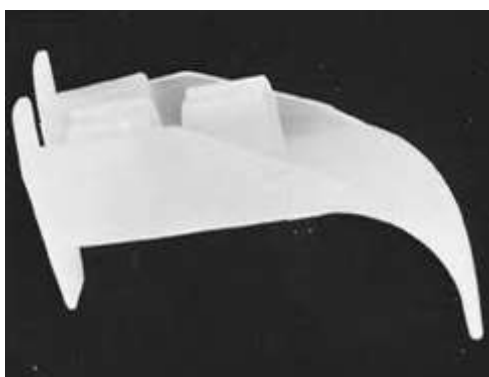


Рисунок 1. Воздуховод Бермана. Рисунок 2. Воздуховод Овассипиана, Рисунок 3. Воздуховод Виллиама

Однако в нашем случае это было невозможно из-за полного закрытия носовых ходов [1]. Ротоглоточные воздуховод Бермана, Овассипиевые фиброоптические интубационные воздуховод и воздуховод Вильямса, а также они могут служить каналом для бронхоскопа (Рис. 1–3).

Воздуховод Бермана позволяют проводить трахеальную трубку непосредственно через ее канал в голосовую щель [8]. Некоторые авторы

ограничивают использование воздуховод Бермана, так как они имеют более длинную изогнутую часть, что может привести к резкому изгибу и затруднениям в продвижении эндотрахеальной трубки [1,8]. У нашего пациента нам удалось без каких-либо затруднений интубировать пациента через воздуховод Бермана. Интубатор - воздуховод Williams позволяет пропускать трахеальную трубку непосредственно через передний канал в голосовую щель. Его можно удалить, надев его на трахеальную трубку [4]. По данным



литературы комбинация Trachlight и распылителя MADgic также может обеспечить отличную местную анестезию дыхательных путей для оротрахеальной интубации в сознании. Эту технику легко выполнять, она хорошо переносится бодрствующим пациентом и полезна при сложной интубации, но трансиллюминация может быть проблемой у пациентов с плотной фиброзной лентой [9]. Если все вышеперечисленные маневры не исполнимы, то единственный альтернативой является контрактуры и при хирургическое устранения с повторной интубацией трахеи, что должно соответствовать типу операции, состоянию здоровья пациента, а также опыту и предпочтениям анестезиолога [10].

В заключение, мы рекомендуем до операции досконально изучить трудности проходимости дыхательных путей и подготовиться к ним. Правильное интраоперационное планирование и командная работа необходимы для положительного результата в таких случаях. Во время интубации пациентов с ожогами ротовой полости в операционной необходимо держать наготове комплект для сложной интубации, включающий фиброоптический бронхоскоп. Это поможет своевременно управлять проходимостью дыхательных путей, а также предотвратить любые побочные эффекты в периоперационном периоде.

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CLINICAL AND EPIDEMIOLOGICAL FEATURES OF COMPLEX DISEASES IN SELF TREATMENT

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weakened, hormonal,
women

ABSTRACT

Diseases of osteoporosis and the assessment of the patient is taken from the degree of fracture as a marker of many diseases. But bone mineral density (SMZ) is also associated with disease and the risk of fracture. Metabolic disorders associated with secondary osteoporosis are 2-3 times higher in women and in men with hip fractures and vertebral fractures. Globally, osteoporosis is the most common metabolic, bone disease, affecting more than 200 million people worldwide. In Europe, the United States and Japan, 75 million people are diagnosed with osteoporosis. As SMZ decreases, osteoporosis increases with age. Senile osteoporosis is more common in people over 70 years of age. Secondary osteoporosis can occur in any person. Although bone loss in women begins gradually, it accelerates menopause, with delivery at age 50 and beyond. The incidence of postmenopausal osteoporosis is highest in 50-70 women. Women are higher on osteoporosis. Half of postmenopausal women have fractures associated with life and osteoporosis; Ush develops a spinal deformity in 25% of women, and 15% experience hip fractures. Hip fractures are similar in different ethnicities.

Osteoporosis is a disease of the bones characterized by the fragility of the defendant. This is entirely due to a lack of calcium in the body, a disease caused by a deficiency in the skeletal system. People with osteoporosis are at risk of life-threatening injuries, as simple injuries or collisions can lead to bone fractures, such as knocking on the door, table, desk, or other equipment. When it is healthy, it can be dangerous for people with osteoporosis.

Causes of osteoporosis

According to statistics, osteoporosis is more common in women, especially if there are hormonal imbalances or menopause in the future. Smoking, drinking, eating habits, keeping the factors that contribute to the disease. In older people, the risk of developing osteoporosis is explained by a large or weakened tendency. This is due to the treatment of osteoporosis, especially hormonal disorders. Hormonal changes are typical for climatic women, such as age, menstruation, temperature,



artificial insemination. So, the causes of osteoporosis are:

Mongoloid / Europoid people are more likely to get sick. Statistically, people of African American descent have never been diagnosed with osteoporosis (rarely, if ever, in the medical field);

- Bone thinness - it can be congenital or acquired;
- People over the age of 65 - from this age the body begins to lose calcium, which is difficult to replace;
- Hereditary (genetic) factor - Osteoporosis can also be caused by a genetic factor, but not always. The degree of closeness of relatives does not play a role;
- Feminine - Osteoporosis occurs in 87% of cases in women against the background of hormonal changes throughout their lives.

In addition to the causes of the disease, there are risk factors that lead to it:

- Deficiencies by the digestive system;
- Pancreatic dysfunction;
- Changes in the ovaries, their removal;
- Female climax;
- Deficiency of vitamin D and calcium in the diet;
- Long-term use of hormonal drugs;
- Regular consumption of alcohol;
- Regular smoking;
- Long-term use of corticosteroids and antiepileptic drugs;
- Any disorders of the endocrine glands;

- Adrenal insufficiency.

Types of osteoporosis

In medicine, there are three different types of osteoporosis, all of which have specific causes in their origin:

Aging osteoporosis - occurs against the background of calcium deficiency, slows down the renewal of bone cells. This type of osteoporosis is more common in older people, especially those over 70 years of age. In women, it develops after menopause.

Secondary osteoporosis - this type of osteoporosis occurs in only 5% of cases. This is due to the fact that any other disease can adversely affect the skeletal system or long-term use of certain types of drugs.

Idiopathic osteoporosis - This type of osteoporosis is also called youth osteoporosis. Because the disease occurs in young children, even newborns. The cause of this disease is still unknown.

Stages of development of osteoporosis

Doctors distinguish three stages in the development of osteoporosis, based on which the severity of the disease is determined.

First degree. Doctors detect a decrease in bone density, a decrease in bone shadow. Usually, the first degree of osteoporosis is detected as a result of prophylactic examinations because it is asymptomatic.

Intermediate. By this period, a significant decrease in bone density, deformations in the vertebrae are detected. The peculiarity of this level is that the person feels pain in the bones, joints and muscles.



Obvious osteoporosis. X-rays show a clear blurring of the bones. By this time, osteoporosis can be easily diagnosed without further examination.

Symptoms of osteoporosis

The danger of the disease is that it goes away without symptoms in the early stages. Therefore, a person does not feel that osteoporosis is developing. The following symptoms of osteoporosis should be considered:

Hemorrhoids in the lower parts of the body at night - this is not due to stress, fatigue and uncomfortable sleep;

- Low back pain - not constant, occurs from time to time, the intensity of pain varies;
- Deficiencies in the digestive system - this is observed in severe deformation of the vertebrae, the bones "press" on the internal organs;
- Constant tiredness - this is a metabolic disorder in which the body has difficulty concentrating;
- Diabetes mellitus - in this case it is necessary to consult a doctor immediately to quickly determine the cause of osteoporosis;
- Defects in the oral cavity - multiple spots, plaque on the teeth, frequent stomatitis and periodontitis;
- The onset of allergic reactions, increased reactions in people who have not previously been allergic to these products;
- Fractures of the nails on the hands and feet, their displacement;

In addition, people with osteoporosis are less likely to have gray hair and increased heart rate. There are a number of signs that can never be denied, they are:

Persistent pain between the shoulders;

- Spinal curvature;
- Increased fragility of large and small bones;
- General muscle weakness;
- Stunted growth.

The above conditions are irreversible, and medical care can stop the development of the disease in the patient and improve his general condition.

Osteoporosis of the pelvic joint

Doctors treat pelvic osteoporosis as a separate type. But its origin is the same as all osteoporosis. The most dangerous aspect of this type of disease is a fracture of the femur, which is the cause of fractures of the femur in older people. In some cases, the femur is completely paralyzed. Modern medicine treats pelvic osteoporosis in the early and middle stages by endoprosthesis.

Diagnosis of osteoporosis

- X-rays of the bones and spine.
- Densitometry - bone strength is determined using ultrasound, X-ray and computed tomography.

X-ray examination does not allow to diagnose the disease at an early stage. X-rays do not show this, even when the bone mass is reduced by 20-30%. He can only work in the later stages.



Bone densitometry shows the exact amount of bone mass and mineral density. This is also called bone screening.

If the woman is healthy, a densitometry should be performed after the age of 65. Doctors are unanimous on this. However, even if you are young, if your doctor suspects that you have brittle bones, you can have a densitometry earlier. Ask your doctor why he or she prescribed this test for you.

Some preparation is required before landing. This diagnostic apparatus determines the amount of minerals in the bone by means of X-rays. If you live in a remote village, you may have to go to the center. If you are taking calcium, you should stop taking it the day before the diagnosis. Otherwise, the results may be incorrect.

Biochemical analysis of the blood is also performed to diagnose osteoporosis and to determine the amount of various hormones (estrogens, thyroid hormones), vitamin D, calcium, phosphorus, magnesium, as well as markers that break down bone tissue and create new ones.

Principles of treatment of osteoporosis

Treatment of osteoporosis is a very complex process. He should be treated by a number of specialists, including an immunologist, rheumatologist, neurologist, endocrinologist, orthopedist-traumatologist. It is important to keep the metabolism in the bones normal. Prevention of bone fractures, reduction of pain, increasing the patient's physical activity are also the main goals of the treatment process.

Osteoporosis is treated with medication. The doctor prescribes medication on an individual basis, for example, if osteoporosis occurs in women during menopause, she is given hormonal therapy. If the disease is age-related, vitamin D and calcium are prescribed.

Almost all patients are prescribed a special diet, therapeutic physical training and massage. Of course, any physical exertion should be kept to a minimum, and only a doctor can prescribe it, taking into account the fragility of the bones. Unfortunately, osteoporosis is not completely cured, proper diet, exercise and treatment prescribed by a doctor can slow the progression of the disease and improve the overall condition of the patient.

Treatment of osteoporosis with folk remedies

Note: In the treatment of osteoporosis, folk remedies are used only as an adjunct. In any case, it is necessary to consult a doctor and take medical treatment!

Mummy

When osteoporosis is diagnosed, it is recommended to take mummy balloons twice a day. Highlights include:

- Mummy balloons should be like the head of a matchstick;
- Dissolve the mummy in 50-70 ml of water;
- This remedy should be taken 20 minutes before meals;
- The treatment period is 20 days.
- Treatment can be done up to 5 times a year, but every 2-3 weeks.



Eggs and lemon

Squeeze 10 lemon juices and mix 6 chicken eggs in it. After that, the mixture should be left for 6 days. On day 7, take the mixture and add 150 ml of cognac and 300 g of honey. Mix well and leave in a dark warm room. It is recommended to take 1 teaspoon after each meal. This procedure is not recommended for gastrointestinal disorders (gastritis, ulcers).

Green cocktails

In osteoporosis, it is better to add "green" cocktails to the diet. What makes them unique:

- Rich in nutrients - 60% of fruits and 40% of vegetables;
- Very easy to absorb - they are prepared by a blender and ready to be absorbed;
- Contraindications to these cocktails (rarely in case of allergy to certain fruits), no side effects at all;
- Every cocktail contains a lot of calcium.

How to make a green cocktail

You will need a powerful blender to make this cocktail. Because the fiber in plants needs to be well digested. It takes 60% fruit and 40% greens to make a classic cocktail. In some cases, it is unpleasant to drink a cocktail of this proportion. Therefore, it is possible to increase the proportion of fruits. For example, 80% fruits and 20% greens. You can choose any fruit for the cocktail. However, softer, faster-absorbing fruit cocktails are more beneficial. For example, like bananas or dates. Apple and pear cocktails are usually sour. It is recommended to drink the

cocktail in the morning on an empty stomach. In general, there is no limit to the number of cocktails per day.

Making a cocktail from calcium-rich products

In osteoporosis, it is better to use calcium-rich products to make a "green" cocktail. For example:

Cabbage is a "champion" of calcium storage. To make a cocktail from barley cabbage, take 5 leaves, mix 4 pears and mint in 500 ml of water. All products are mixed in a blender and drunk throughout the day. If you want a sharper cocktail, use apples instead of pears and citric acid instead of mint.

One glass of turnip cocktail contains 250 mg of calcium. To make a cocktail, take 1-2 turnip leaves, mix 5-6 peaches and 500 ml of water. Take it out of the blender and drink it throughout the day.

Although Chinese cabbage does not contain a lot of calcium, it is very useful in osteoporosis as a "green" cocktail. To do this, take a few cabbage leaves, mix them with 2 mangoes and 500 ml of water, then pass through a blender and drink. Optionally, you can replace the mango with dates or peaches.

Also, don't forget to include sesame seeds, roasted almonds, pistachios, and peanuts. Thus, "green" cocktails are used not only in the treatment of osteoporosis, but also in its prevention.

Diet in osteoporosis

Even if osteoporosis is detected at an early stage and medical treatment is given, the patient should always be on a diet.



Patients with osteoporosis should exclude the following products from the diet:

- Fizzy drinks, caffeinated liquids, such as energy drinks;
- Margarine, mayonnaise and any fatty sauces, preferably replaced with sour cream or olive oil;
- Sheep or beef fat - when eating meat, it is better to separate it from fat;
- Any coffee drinks;
- Alcohol;

Use sugar instead of sugar;

- Sweets.

It is also necessary to reduce protein-rich products - they should not exceed 200 g per day. Given that osteoporosis is caused by metabolic disorders, it is necessary to take less sodium, because if its amount increases, the water-salt balance is disturbed. It is necessary to limit the following products:

- Sausage products, sausages and any smoked meat;
- Fast food;
- Semi-finished products;
- Chips, crackers;
- Salts.

In general, in osteoporosis, the diet is prescribed in different ways. The following are some of the foods that can be eaten in this disease:

- Fish. Any sea and river fish are beneficial to the body in osteoporosis. They should be eaten boiled or steamed, not fried;

- Vegetables. There are no restrictions on the type of vegetables you can eat, even tomatoes, squash, and zucchini;

- Eggs. Eggs are a very useful product for a person with osteoporosis;

- Dairy products. There is no doubt that dairy products are rich in calcium. All you have to do is pay attention to their fat content;

- Greens;

- Fruits, berries;

- All kinds of nuts and pistachios;

- Any type of mushroom;

- Legumes;

- Vegetable oils.

Although there are many unrestricted products for osteoporosis, consult your doctor to take them in moderation. The diet for osteoporosis is as follows:

- Eat at least 5 meals a day;
- The interval between meals should not exceed 3.5 hours;
- It is not necessary to follow a monodiet, for example, to consume only one product per day;
- It is better to eat home-cooked food;
- It is better to eat yogurt or fruit on the street on an empty stomach;
- It is recommended to eat meat with vegetables.

Diet alone is not the answer to the disease, it is the only cure. Osteoporosis is a serious and difficult process to treat. But that doesn't mean you have to lie down to



protect your bones from depression. Instead, it is necessary to try to overcome the disease using active exercise, drug treatment, diet, folk remedies. The more you try, the happier you will be.

Prevention of osteoporosis

To prevent osteoporosis in old age, you need to eat right and lead a healthy lifestyle from a young age. Calcium-rich foods such as skim milk, yogurt, cauliflower, fish, cheese, alcohol and tobacco, and physical activity are recommended. A person under the age of 65 should consume 1000 mg of calcium per day, and after 65 - 1500 mg of calcium.

When the usual preventive measures do not work, doctors resort to medication. But remember, they are not to be taken for granted. Because any drug has side effects. Calcium alone does not cure osteoporosis. Because it is very difficult for the body to absorb. Calcium and vitamin D should be balanced. Only a doctor can do that.

During menopause, women are prescribed the hormone estrogen to prevent osteoporosis. It is also recommended to pay special attention to physical education. After the age of 40, all women should have their thyroid checked and, if necessary, treated.

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METHODS OF FISH GROWING AND STUDY IN FISHERIES

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ABSTRACT

This article is devoted to the development of the sector of the national economy, which is engaged in increasing and improving the quality of fish stocks in water bodies; biological bases of fish breeding activities (artificial reproduction and training of fish in new conditions, breeding of new species, improvement of a meliorative condition of water basins) and biotechnology of basic fish breeding processes (adult fishing, hatching, feeding, etc.) development.

Fish products play an important role in meeting the needs of the population in protein. Fish is the most important source of vitamins for humans, as fish is widely used to increase eye acuity, cleanse the body, and prepare a number of essential medicines. Fishermen have been fishing in the oceans, seas, rivers and lakes for centuries. At the same time, for more than 2,000 years, fish have been raised in artificial ponds. The small fish that hatch from the eggs are placed in ponds, fed and fertilized. As technology progressed, fishermen's dependence on external factors decreased, and as a result of the use and development of scientific advances, they began to achieve high performance. The aquaculture sector of the economy was formed and developed particularly rapidly as natural fish stocks dwindled. Along with

other countries, Uzbekistan is carrying out large-scale practical work to increase fish production.

Fisheries play an important role in the national economy of our country, and along with the planned management of the economy, the rational use of natural resources, including the country's fish resources, conditions are created for the development of fisheries.

At present, the issue of drastically increasing fish production remains relevant due to food security concerns.

Low consumption of fish products leads to a deficiency of essential vitamins (iodine, calcium and other digestible proteins) in the human body (Kurbanov, Khalpaev, 2011).

They noted that the creation of food reserves in the country is the main task of



the leaders of each region and the most difficult task. The results of fisheries in each region are lagging behind, so we need to develop so many opportunities for fishing.

"In five years, we have increased from 65 tonnes to 400,000 tonnes, an increase of six times, but in some areas it has become clear that yields are lagging behind. Among these regions, Syrdarya region also has a number of shortcomings in this area. The fact that in addition to clusters, homeowners are now allowed to build and use their own ponds in addition to clusters, given the opportunity to develop fisheries, is a great focus on the development of this sector. Property taxes will be reduced by 50% if homeowners earn money by building fishing and ponds on their land. Land for fish farmers and their self-employed population will be transferred. Clusters that grow more than 80 tons of fish a year will be exempt from all taxes for a period of 3 years," said the President of the Republic of Uzbekistan Sh.M. Mirziyoyev on December 21, 2021.

Today, special attention is paid to the development of this sector, fisheries. In other words, it is necessary to pay attention to feeding, breeding, segoletka period, observation and preparation of the winter pond. Fishing is of great importance in the national economy of the country. In addition to its use, conditions are being created for the development of fisheries. Reservoirs and ponds in the country are the main sources of live fish.

Currently, there are more than 80 species of fish in the basins of the Republic. Many fish species filled the ichthyofauna of Uzbekistan in the second half of the twentieth century. Serious reforms are

underway in the network. Its legal framework has been radically changed, the old-fashioned state-owned fisheries have been privatized, and competitive fisheries have been established that meet the requirements of market relations.

According to the recommendation of the Ministry of Health, each organism should consume 12 kg of fish products a year for healthy development. At present, the fish grown in fish farms and caught in natural reservoirs do not fully meet the needs of the population of the Republic.

The main part of the fish grown in the country is in ponds.

In the 1980s, the average productivity of ponds was 24 quintals per hectare, while according to the Ministry of Agriculture and Water Resources, the average productivity of fisheries in 2004 was 24 quintals. 4 quintals. Currently, fish production in Uzbekistan is 10,000 tons per year. Consumption is 0.5 kg per person per year. This is well below the medically required level of 16 kg per person per year. To achieve this norm, it is necessary to produce more than 400,000 tons of fish per year. Fishing does not increase the amount of fish that can be consumed by the population. This is due to the fact that all rivers in the country are engaged in irrigation management. Irrigation regimes, on the other hand, conflict with the biological cycle of the fish and do not allow the fish to be produced normally. This situation makes fishing a risky business and a type of activity that ignores capital investment.

The decline in pond productivity is due, firstly, to the lack of compound feed that fully meets the needs of fish, the quality of feed produced is low and expensive, and



secondly, the lack of fish farming technology adapted to market economy conditions.

According to the technology of fish farming in the existing pond farms, the largest number of carp was transferred to the ponds for fish farming, followed by pike-perch and, lastly, white grass carp per hectare. at the expense of the area, only 100-150 pieces were transferred to the ponds in order to assimilate the existing grasses.

Carp is a popular fish, but in the market economy, the high cost of mixed fodder, its low quality, the fact that the cultivation of these fish is not economically viable for fisheries, leads to its almost exclusion from polyculture.

Reservoirs and ponds in the country are the main sources of live fish. In this regard, in recent years in the Republic of Uzbekistan, great importance is attached to the establishment of artificial fish farms to establish fish farming.

One of the most pressing issues is the protection of fish from various influences in the process of ontogenetic, that is, embryonic and free life, and the achievement of high results using modern methods of breeding.

The conditions for growing summer fish in Uzbekistan are favorable, and this period lasts from June to November.

Amur loves reeds and other algae. Whitefish feed on compound feed, daphnia, and aquatic plankton. Carp were given wheat and corn. When fed, they are adapted to the following diet: the white carp feeds on surface water, the carp feeds on bottom food, and the white grass carp feeds on underwater food.

The weight of the fish raised in the pond was measured every month, and as a result, we observed that they were growing.

Fish larvae were fed twice a day, in the morning and in the evening. These fish were released into large ponds after 10 months and weighed between 0.25g and 100g.

Our observations show that about 200,000 of the 1 million larvae released into the pond, or 700,000 of the 5 million larvae, survived.

Of course, in order for fish farms to grow normally and increase their productivity, it is necessary to: improve the natural nutrient base of the watershed; improve land reclamation, provide the watershed with organic and inorganic fertilizers, and provide fish with mixed fodder.

It is known that in the early days, the larvae feed on natural nutrients in the water - phytoplankton and zooplankton. The development of phyto and zooplankton organisms is observed as a result of pond treatment.

Wintering pond: When the water temperature drops to 12-14 ° C in autumn, carp fish do not feed, so one-year-old chicks in breeding ponds (chicks distributed in ponds in spring become one year old) are caught and put into wintering ponds. line is sent.

Winter ponds are designed for winter storage of fish: parent fish, segoletka. The ponds on the farm mainly take into account the characteristics of fish breeding and rearing, the species of fish bred in them, the growing seasons, as well as the topography of the selected area for the pond - field conditions, water quality. The depth of winter ponds is 2.5-3.0 meters, and low-yielding, non-organic ponds are



selected. It is kept dry throughout the summer because it is not possible to fish in muddy ponds.

The area of the winter pond is determined by the total area of the farm. Accordingly, its area can range from 0.2 hectares to 1.5 hectares. The thickness of its freezing water should not be less than 2.5-3 m. The difference between a winter pond and a summer pond is that the bottom of the winter pond should be free of hard, high aquatic plants and their remains. It is necessary to change the water of the winter pool frequently. The number of fish that come out of winter depends on the quality of the water and the water exchange. Water exchange depends on the amount of oxygen in it and the amount of carbon dioxide in the water. It also depends on the fat content of segolets for the winter. If the fat content is not at the required level, such piglets will not survive the winter.

For wintering, the average depth of the pool should be up to 1.5 meters, a maximum of 2.5 meters, and the pool water should be changed throughout the winter. If the water freezes, its surface should be perforated and an air hole should be drilled. Otherwise, the fish may suffocate and die. Of the fish mentioned above, the Amur catfish, in particular, is very fragile and dies from lack of air.

One of the most difficult tasks for fisheries is to get the wintering technology right.

The following activities will be held during the winter:

The bottom of the ponds will be cleaned and 150-200 kg of lime will be applied per hectare.

The pools are filled with water and the water in the pool (at a rate of 8 mg per

liter) is treated with malachite green. During the winter, it is very useful to repeat the treatment of water with malachite green at the rate of 0.1 mg/l every 7-10 days. To do this, a solution of the required amount of malachite green powder is prepared and poured into the pool.

One summer of carp species is overwintered at a transfer rate of 500-800 G.

During the winter, dead fish are removed from the pond every day.

The water basins should have a constant flow of water and the water should be at the same temperature. Once a month, a control hunt is held in January. It is known that fish go to the bottom of the water in winter and do not feed. If fed, they will rot to the bottom of the water, spoil the water and result in fish becoming ill.

In the spring, one-year-old chicks from the winter are placed in ponds where fish are eaten.

Segoletka (one summer fish) period: In the spring, one-year-old chicks from the winter are placed in ponds where fish are raised for consumption.

The weight of segoletka (one summer fish) varies: 40-50g for white squid and 60-70g for cypress squid. Survival is 40%, and 70 to 260 kg of segolteka (one summer fish) are planted per hectare when the fish are fed with natural feed for growth.

The area of ponds set aside for growing seedlings will be smaller (1, 2, 3, 4 ha) than the area of ponds. Excessive growth of tall aquatic plants in these ponds is not allowed. This reduces the grazing area of the fish. The pool water is fertilized before the segolet is installed. Water is poured



into the pool through kapron sieves. An iron ring is made.

Without mixed feeding, 8,000 carcasses of carp weighing 30 kg per 1 hectare of growing pond will be fed at the expense of natural nutrients. To do this, 11,430 small fish will be placed, taking into account the 30% catch. If fed intensively, mixed feed, this figure is increased by 5-7 times. Segoletka is a special compound feed.

Herbivorous fish segolets are fed until the water temperature drops to 8 ° C. The daily norm or ration is 0.5-1.0% of the body weight of fish, which then increases to 6-8% with age. The fish are fed after 15-20 days. Segolets should be well fattened before winter and have a body fat reserve of 3% relative to body weight.

If the grower puts too many small fish in the pond without reckoning and does not feed them intensively, the fish will not grow. The reason is a lack of nutrients. Fish don't grow well enough. In this case, the segolets do not survive the winter easily. If the segolets are less than the required norm, the fish can grow well, but the number is small. Small fish are fed until the water temperature reaches 8 ° C. In autumn, the yield of segolets should not be less than 70-80.

Fish for consumption: In the breeding pond, these fry are raised all summer long and in the fall each weighs 400-500 g, reaching the level of edible fish.

Consumer fish ponds are also prepared as spawning and breeding ponds before the fish are brought in, after which the fish are distributed to them. Each hectare of such a pond will be planted with 400-500 one-year-old carp, which will produce 200-2500 kg of fish per hectare. And if the fish

there are more nutritious, you can put more fish in each pond.

In the summer, ponds for edible fish are maintained in the same way as breeding ponds. These fish, raised in ponds, are caught in October-November. The water in the pond is slowly released so that the fish can collect in the pits and then be easier to catch. The fish caught are weighed and counted to determine how many fish have died during the summer.

In the fall, fish are caught from the ponds and sent for sale in accordance with the fishery management plan. By this time the mass of commercial fish, for example: 500-600 g in carp; The 2-year-old white amur and white sturgeon weighs 900-950 grams. In order for natural nutrients to grow well, 5-10 tons of well-rotted manure should be spread evenly on each hectare of the pond. The water in the pond is replenished 7-10 days before the fish larvae lay, the water must pass only through the specified net.

One day after the pool is filled, a pool of natural food organisms (*Daphnia magna*) is placed in the ponds. The daphnia galaxy is brought from the daphnia growing ponds around the pool. There are 3 ways to grow fish in fisheries.

1. Extensive fish farming is a method of natural feeding and fertilization. Fish productivity is 8-10 kg.
2. Incomplete accelerated method. In this method, in addition to natural nutrients, mixed fodder is given. It is supplemented with natural nutrients. 20 kgG.
3. Intensive fish feeding. Fish fed in this way are fed with mixed fodder. In fact, natural foods make water nauseous and negatively affect fish productivity.

Very cheap, especially extensive technology-based carp (carp, white and



cypress carp and grass carp) are the most suitable fish species for the conditions of Uzbekistan, and their food is natural food. Therefore, it is necessary to stimulate the development of nutritious organisms and organize their consumption by fish.

Only after good conditions in the pond do daphnia multiply and develop well, and when their number reaches 1-1.2 thousand per liter of water in 5-6 days, it is possible to lay fish larvae. Grown for 25 days. During the breeding season, laboratory fish specialists constantly monitor the growth of fish larvae, the amount of nutrients, the hydrochemical regime of the water, and so on. If the amount of natural food in the pond is depleted, the fish larvae are transferred from small ponds to breeding ponds.

In small ponds, artificial feeding is also provided when natural nutrients are depleted. Wheat flour (1 kg 100 thousand larvae) and soy flour (2 kg 100 thousand larvae) are used as artificial food.

It is recommended to place 1.5-2.5 million larvae of herring (white grass carp) on the surface of a small breeding pond per hectare. The amount and weight of juveniles raised in these ponds also vary. Carnivorous fish fry weigh 30-50 milligrams and yield 60%.

The feeding of grass carp with high aquatic plants begins when the water temperature is 10-12 ° C. The maximum temperature for their maximum feeding is 20-30 ° C. The growth rate of fish depends largely on water temperature and nutrient supply. At 30 days of age, the grass carp is 3 cm long and is partially fed by soft algae. Selectively consumes algae at low temperatures, consumes algae intensively when the water temperature is between 15 and 30 degrees, if it is densely packed, weighs 250-. Not less than 300 grams.

The food used in fishing is natural and artificial. Natural nutrients include aquatic organisms such as phytoplankton, zooplankton, zoobenthos, and higher algae. To stimulate their development, the ponds are fertilized with organic and inorganic fertilizers. In such ponds, if the fish are fed on a completely natural basis, it is called an extensive method. Incomplete intensive fish feeding is called if the pond uses a supplementary feeding method other than fertilizer. If the fish is fed this way, the productivity will be much higher. Intensive fish farming is when the fish are fed a complete mix of feed without the use of natural feed and fertilizer. It is advisable to have a mill on the farm to prepare artificial fodder.

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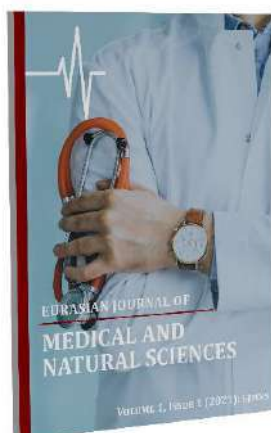
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«СРАВНИТЕЛЬНЫЙ АНАЛИЗ МЕТОДОВ ПРЕПОДАВАНИЯ ИНФОРМАТИКИ СТУДЕНТАМ ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЙ»

Мирсаидов Иброхимбек Толиб ўғли

Магистр направления: Компьютерные технологии и программное обеспечение, Наманганский инженерно-строительный институт

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ИСТОРИЯ СТАТЬИ

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КЛЮЧЕВЫЕ СЛОВА

Эпоха развитых технологий, методы, восприятие, сотрудничество, вынужденная активизация, пассивные, активные, интерактивные методы.

В нынешнюю эпоху развитых технологий, человечеству не предоставляется возможности быть отчужденным от технологий. Если еще несколько десятилетий назад это было вопросом материального положения человека, то на сегодняшний день нет ни одного человека которому ни разу не пришлось бы работать на компьютере, смартфоне и т.д.

Данные технологии дают человечеству множество новых возможностей, упрощения человеческого труда, минимизирования затрат времени во многих отраслях жизни.

Одним из важных предметов уже со старших классов школы является информатика, школьники получают

АННОТАЦИЯ

В данной статье описана актуальность преподавания информатики в целом, и проблемы преподавания студентам высших учебных заведений, описан процесс подбора метода преподавания в группах учителем, описаны методы преподавания информатики, выполнен сравнительный анализ методов по результативности применения

первые навыки работы с компьютером, некоторыми программами: пакет Ms Office, фоторедакторы и др. Но процесс преподавания информатики и информационных технологий в высших учебных заведениях намного усложняется. Здесь речь уже идет о затрудненных профессиональных программах с расширенными возможностями, и очень важны полноценное внимание сосредоточенность студента на получаемую от учителя информацию. Что в свою очередь зависит от преподавателя, поэтому преподаватель на первых занятиях в группе анализирует состав учащихся, контингент знаний имеющихся у



студентов, распознает активных и пассивных студентов и уже к следующему занятию должен выбрать метод преподавания информатики, подходящий индивидуально данной группе студентов.

При анализировании данного процесса учитель должен учитывать множество факторов, например таких как, поднятие активности у пассивных студентов, привлечение их внимания, поддержку активной аудитории и множества других.

Современные методы обучения включают в себя любые способы, приемы, инструменты разработки, проведения и совершенствования процесса обучения чему-либо, которые отвечают следующим требованиям:

Сотрудничество обучающихся и преподавателей в планировании и реализации всех этапов процесса обучения. Активное, творческое, инициативное участие школьников в процессе получения необходимого им результата обучения:

Максимальная приближенность результатов обучения к сфере практической деятельности.

Отсюда и специфика современных методов обучения, отличающая их от методов традиционного обучения:

Обеспечение «вынужденной» активизации деятельности обучаемого, даже вне зависимости от его субъективного желания участвовать в процессе обучения;

Обеспечение повышенной степени мотивации и эмоциональности;

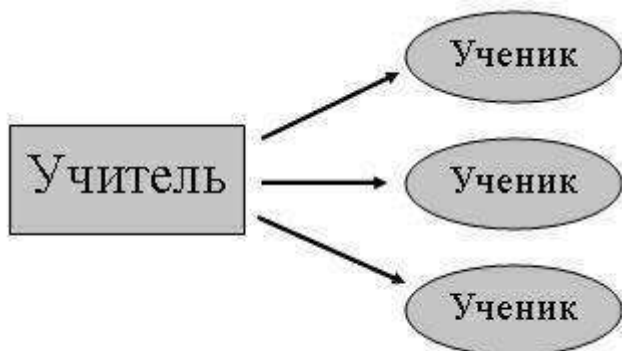
Обеспечение прямых и обратных связей при взаимодействии обучаемого с преподавателем.

В ходе изучения методов стало известно, что их можно разделить на три группы:

1. Пассивные методы;
2. Активные методы;
3. Интерактивные методы.

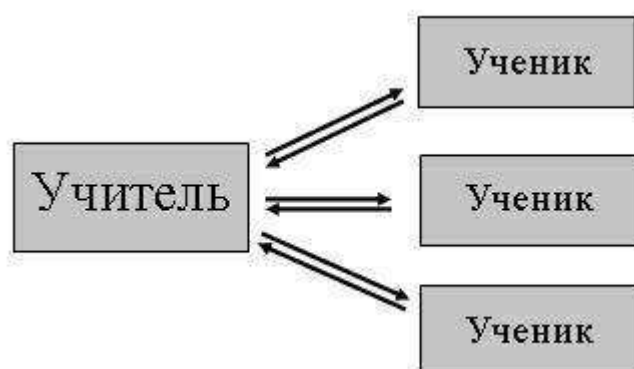
Пассивный метод – это форма взаимодействия учащихся и учителя, в которой учитель является основным действующим лицом и управляющим ходом урока, а учащиеся выступают в роли пассивных слушателей, подчиненных директивам учителя.

Особенностями пассивной модели или экстрактивного режима является активность обучающей среды. Это значит, что ученики усваивают материал из слов учителя или из текста учебника, не общаются между собой и не выполняют никаких творческих заданий. Примерами такой модели могут быть традиционные формы уроков, например в виде лекции. Эта модель самая традиционная и довольно-таки часто используется, хотя современными требованиями к структуре урока является использование активных методов, вызывающих активность.



Активный метод – это форма взаимодействия учащихся и учителя, при которой учитель и учащиеся взаимодействуют друг с другом в ходе урока и учащиеся здесь не пассивные слушатели, а активные участники урока. Если в пассивном уроке основным действующим лицом и менеджером урока был учитель, то здесь учитель и учащиеся находятся на равных правах. Активные или интерактивные методы предполагают стимулирование познавательной деятельности и самостоятельности учеников. Эта модель предполагает наличие творческих (часто домашних) заданий и общение в системе ученик-учитель, как обязательных.

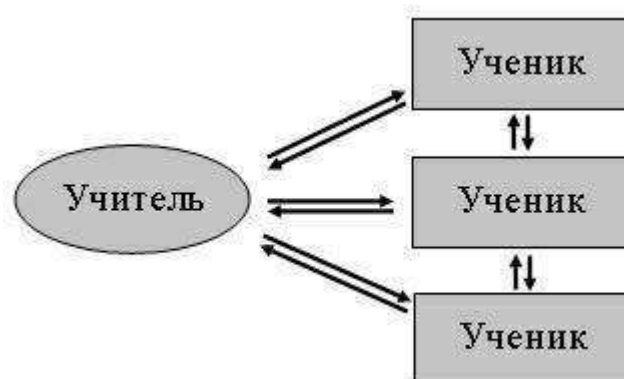
Этот метод характерен своей односторонней направленностью, а именно для технологий самостоятельной деятельности, самообучения, самовоспитания, саморазвития, и ни сколько не учит умению обмениваться опытом и взаимодействовать в группах.



Интерактивный метод.
Интерактивный («Inter» - это взаимный, «act» - действовать) – означает взаимодействовать, находится в режиме беседы, диалога с кем-либо.

Другими словами, в отличие от активных методов, интерактивные ориентированы на более широкое взаимодействие учеников не только с учителем, но и друг с другом и на доминирование активности учащихся в процессе обучения. Место учителя в интерактивных уроках сводится к направлению деятельности учащихся на достижение целей урока.

Таким образом, при пассивном методе работает только учитель, все рассказывает и объясняет, обратной связи от ученика не имеется. Все будет



зависеть от того на сколько ученик воспримет полученную информацию. В активном методе идет обратная связь от ученика, и здесь уже не полностью все зависит только от восприятия информации, в этом методе активно



идет анализ информации параллельно
ее поступлению.

В интерактивном методе, ученики
начинают выделяться доминировать,

излагать свое понимание поступившей
информации дополнять полученную
информацию.

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DETERMINATION OF RISK FACTORS OF HYPERTENSIVE DISORDERS IN PREGNANT WOMEN

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ABSTRACT

In this article determination of dangerous groups of hypertensive disorders in pregnant women. Hypertension is the most common medical problem encountered during pregnancy, complicating 2-3% of pregnancies. Pregnancy: 1) chronic hypertension, 2) preeclampsia-eclampsia, 3) preeclampsia superimposed on chronic hypertension, and 4) gestational hypertension (transient hypertension of pregnancy or chronic hypertension identified in the latter half of pregnancy) (1). This terminology is preferred over the older but widely used term pregnancy-induced hypertension (PIH) because it is more precise.

Introduction

Worldwide there is disagreement about many aspects of the classification, diagnosis, and management of the hypertensive disorders of pregnancy. This lack of consensus hampers our ability to study not only the immediate rates of adverse maternal and fetal outcomes for the various hypertensive disorders in pregnancy, particularly preeclampsia, but also the long-term health outcomes of women and babies who survive this condition. It also impacts on research into the pathophysiology of this condition and has almost certainly delayed the development of effective screening tests and treatments, leading to poorer pregnancy outcomes.

Classification

1. Hypertension in pregnancy may be chronic (predating pregnancy or diagnosed before 20 weeks of pregnancy) or de novo (either preeclampsia or gestational hypertension).

2. Chronic hypertension is associated with adverse maternal and fetal outcomes and is best managed by tightly controlling maternal blood pressure (BP, 110–140/85 mm Hg), monitoring fetal growth, and repeatedly assessing for the development of preeclampsia and maternal complications. This can be done in an outpatient setting.

3. White-coat hypertension refers to elevated office/clinic ($\geq 140/90$ mm Hg) BP, but normal BP measured at home or work



(<135/85 mm Hg); it is not an entirely benign condition and conveys an increased risk for preeclampsia.

4. Masked hypertension is another form of hypertension, more difficult to diagnose, characterized by BP that is normal at a clinic or office visit but elevated at other times, most typically diagnosed by 24-hour ambulatory BP monitoring (ABPM) or automated home BP monitoring.

5. Gestational hypertension is hypertension arising de novo after 20 weeks' gestation in the absence of proteinuria and without biochemical or hematological abnormalities. It is usually not accompanied by fetal growth restriction. Outcomes in pregnancies complicated by gestational hypertension are normally good, but about a quarter of women with gestational hypertension (particularly those who present at <34 weeks) will progress to preeclampsia and have poorer outcomes.

6. Preeclampsia is a complex medical disorder; worldwide, each year, it is responsible for >500 000 fetal and neonatal deaths and >70 000 maternal deaths. Preeclampsia can deteriorate rapidly and without warning; we do not recommend classifying it as mild or severe.

7. Proteinuria is not mandatory for a diagnosis of preeclampsia. Rather, this is diagnosed by the presence of de novo hypertension after 20 weeks' gestation accompanied by proteinuria and/or evidence of maternal acute kidney injury (AKI), liver dysfunction, neurological features, hemolysis or thrombocytopenia, or fetal growth restriction. Preeclampsia may develop or be recognized for the first time intrapartum or early postpartum in some cases.

8. The hemolysis, elevated liver enzymes, low platelets syndrome is a (serious) manifestation of preeclampsia and not a separate disorder.

Chronic Hypertension in pregnancy

Most studies have not found adverse pregnancy outcomes. Nonetheless, caution should be used in cases of impaired uteroplacental perfusion, such as preeclampsia or intrauterine growth restriction. Atenolol and other pure beta-blockers should be avoided: they have been associated with babies born small for their gestational age. Angiotensin-converting enzyme (ACE) inhibitors are contraindicated in the second and third trimester because they are associated with a myriad of congenital anomalies, including renal failure, oligohydramnios, renal dysgenesis, reduced ossification, pulmonary hypoplasia, and fetal and neonatal death. Patients presenting in the first trimester on an ACE inhibitor should either be taken off antihypertensive medications or switched to another agent. Exposure during this time is not an indication for pregnancy termination, however. Angiotensin II receptor antagonists are considered guilty by association because of their similarity to ACE inhibitors, but there are no data to confirm this. Chronic hypertension accounts for a disproportionate amount of maternal and perinatal morbidity and mortality, mostly because of an increased risk of superimposed preeclampsia. There is an increased risk of prematurity, birth of infants who are small for their gestational



age, intrauterine death, placental abruption, and cesarean delivery.

Complication rates are directly related to the severity and duration of elevated blood pressures. For instance, patients with severe hypertension in the first trimester have a greater than 50% risk of developing superimposed preeclampsia. All hypertensive patients should undergo increased surveillance, serial laboratory tests throughout pregnancy, serial ultrasound scans to follow growth, and antenatal testing. The baby should be delivered vaginally if possible.

Gestational Hypertension

Gestational hypertension, formerly known as pregnancy-induced hypertension or PIH, is the new onset of hypertension after 20 weeks of gestation. The diagnosis requires that the patient have:

- Elevated blood pressure (systolic ≥ 140 or diastolic ≥ 90 mm Hg, the latter measured using the fifth Korotkoff sound)
- Previously normal blood pressures
- No protein in the urine
- No manifestations of preeclampsia

Also known as transient hypertension, gestational hypertension is actually diagnosed retrospectively when the patient does not develop preeclampsia and if blood pressure returns to normal by the 12-week postpartum visit. Fifty percent of women diagnosed with gestational hypertension between 24 and 35 weeks develop preeclampsia. The diagnosis of gestational hypertension mandates increased surveillance. Women who

progress to severe gestational hypertension based on the degree of blood pressure elevation have worse perinatal outcomes than do women with mild preeclampsia, and require management similar to those with severe preeclampsia.

Management of preeclampsia

Preeclampsia places both mother and fetus at risk. It is, however, a maternal disorder. The mainstay of treatment is early detection and managed delivery to minimize both maternal and fetal risks. If the pregnancy is at term, the decision is easy: the baby should be delivered. The decision to deliver involves balancing the risks of worsening preeclampsia against those of prematurity. Delivery is generally not indicated for women with mild preeclampsia until 37 to 38 weeks of gestation and should occur by 40 weeks. If remote from term, the mother should be admitted for evaluation. She will need:

1. Baseline and serial laboratory tests (complete blood cell count, BUN, creatinine, uric acid, ALT, AST).

2. Ultrasonography to measure fetal growth and amniotic fluid volume and Doppler ultrasonography. Umbilical artery systolic/diastolic ratios measured by Doppler ultrasonography may detect early uteroplacental insufficiency.

3. Antenatal testing (nonstress test or biophysical profile). The biophysical profile is an assessment of fetal well-being. Fetuses that are well oxygenated behave normally by twisting, squirming, flexing and extending extremities, and breathing. Fetuses that are hypoxic lie still, trying to conserve oxygen.



4. A 24-hour urine collection for protein. The goals of treatment are to prevent seizures, lower blood pressure to avoid maternal end-organ damage, and expedite delivery.

Magnesium sulfate is still the drug of choice for preventing and arresting eclamptic seizures. It has the additional benefit of reducing the incidence of placental abruption. Serum magnesium levels should be monitored in women with elevated serum creatinine levels, decreased urine output, or absent deep tendon reflexes.

Magnesium toxicity can lead to respiratory paralysis, central nervous system depression, and cardiac arrest. The antidote is calcium gluconate, 1 g infused intravenously over two minutes.

Antihypertensive medications are used solely to prevent maternal morbidity and have no effect on disease progression or preventing eclampsia. Medications must be given with caution: if blood pressure is lowered too fast, it can have a dramatic effect on uteroplacental perfusion and can cause an already compromised fetus to rapidly decompensate and become bradycardic. Preferred medications are hydralazine (5-10 mg intravenous bolus every 10-15 minutes), labetalol, nicardipine, and sodium nitroprusside. Intravenous labetalol and hydralazine are commonly used for the acute management of preeclampsia.

Diuretics are usually contraindicated because of the already collapsed intravascular volume. However, if the pulmonary capillary wedge pressure is high, diuretics are necessary.

Intravenous hydration for oliguria must be given cautiously to avoid pulmonary edema, ascites and cardiopulmonary overload. If there is no evidence of pulmonary edema, a trial of fluid resuscitation (500 mL over an hour) should be given.

Prediction and Prevention of Preeclampsia and Associated Complications

1. No first or second trimester test or set of tests can reliably predict the development of all cases of preeclampsia; however, a combination of maternal risk factors, BP, placental growth factor (PLGF), and uterine artery Doppler can select women who may benefit from 150 mg/d of aspirin to prevent preterm (before 37 weeks gestation) but not term preeclampsia. ISSHP supports first trimester screening for risk of preeclampsia when this can be integrated into the local health system although the cost effectiveness of this approach remains to be established.

2. ISSHP recommends that women with established strong clinical risk factors for preeclampsia (ie, prior preeclampsia, chronic hypertension, pregestational diabetes mellitus, maternal body mass index >30 kg/m², antiphospholipid syndrome, and receipt of assisted reproduction) be treated, ideally before 16 weeks but definitely before 20 weeks, with low-dose aspirin (defined as 75–162 mg/d, as studied in randomized controlled trials).

3. We recommend at this stage against the routine clinical use of rule-in or rule-out tests (specifically PLGF or sFlt-1 [soluble fms-like tyrosine kinase-1]/PLGF



ratio) for preeclampsia, which should continue to be evaluated within the context of clinical trials.

General Recommendations

1. The recommendations described in this document are for an ideal setting. In some instances, it may not be possible to adopt all of these recommendations. Health systems in LMICs may have to consider the minimum required to reach as many women as possible.

2. It is recommended that there is ongoing review and update of national and facility clinical guidelines, preservice educational material, and in-service training materials to ensure that all documents reflect these ISSHP recommendations so as to improve outcomes for women and babies.

3. In circumstances where the documented goals of this guideline are not attainable in their entirety, physicians should work pragmatically toward them as far as the local resources allow.

4. It is the responsibility of managing physicians to advocate for the use of effective interventions whether they practice in well- or under-resourced settings.

5. The distances between community clinics and referral hospitals are often large, and transport problems exist. For this reason, patients diagnosed with preeclampsia should be referred as soon as possible to a center with an appropriate level of care and managed as inpatients.

6. The effectiveness of referral systems in many LMIC is less than optimal, and many rural areas are without centers

that can provide basic obstetric and neonatal services. Women diagnosed with preeclampsia in such settings should be advised to relocate immediately to areas with better healthcare services, especially where they have family members if possible.

7. Communities should put strategies in place for transport from clinics or primary healthcare centers to referral centers.

8. All healthcare facilities should regularly review and update facility and community health worker referral pathways for women with preeclampsia.

9. All women with a hypertensive disorder of pregnancy require delivery in a center that provides emergency obstetric and neonatal care while women with maternal complications require delivery in a center capable of providing maternal critical care. Those with pregnancies at the limit of viability require the highest available level of neonatal support.

10. Antihypertensive agents for treatment of moderate and severe hypertension and MgSO₄ to prevent or treat eclampsia must be available at community level centers and clinics so that patients can be stabilized and referred safely.

11. Women with preeclampsia in LMICs may have a limited comprehension of the nature and risks of the disease.

Conclusion

In conclusion, although many pregnant women with high blood pressure have healthy babies without serious problems, high blood pressure can be



dangerous for both the mother and the fetus. Women with pre-existing, or chronic, high blood pressure are more likely to have certain complications during pregnancy than those with normal blood pressure. However, some women develop high blood pressure while they are pregnant (often called gestational hypertension).

The effects of high blood pressure range from mild to severe. High blood pressure can harm the mother's kidneys and other organs, and it can cause low birth weight and early delivery. In the most serious cases, the mother develops preeclampsia-or "toxemia of pregnancy"-which can threaten the lives of both the mother and the fetus.

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QADIMIY VA TUMANLASHGAN BUG'DOY NAV NAMUNALARI DONIDA TEMIR VA RUX MIKROELEMENTLARI MIQDORINI TAHLIL QILISH

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mikroelement,
deformatsiya, disfagiya,
miyelin, anemiya,
fortifikatsiya, genetik
barqarorlik, populyatsiya,
urug'chilik, donor.

ANNOTATSIYA

O'zbekistonda tumanlashgan va qadimdan ekib kelinayotgan bug'doy navlarining donidagi inson salomatligi uchun muhim bo'lgan mikroelementlar - temir va ruxning miqdori skrining qilindi. Qashqadaryo va Surxondaryo viloyatlarining tog'li zonalariga ekspeditsiya uyushtirilib, qadimiy nav na'munalari yig'ib kelindi. Skrining natijasida tarkibida temir mikroelementi nisbatan ko'p bo'lgan na'munalar ajratib olindi va Xorazm vohasi o'tloqi allyuvial tuproqlari sharoitida yetishtirish texnologiyasi, biokimyoviy ko'rsatkichlari va noqulay omillarga chidamlilik kabi ko'rsatkichlari ustida izlanishlar olib borilmoqda.

Respublikamizda mustaqillikning dastlabki yillaridan boshlab, hukumatimiz tomonidan aholini o'zimizda yetishtirilayotgan don va non mahsulotlariga bo'lgan ehtiyojini to'la qondirish borasida kompleks chora-tadbirlar ishlab chiqilib, ularni amaliyotga tatbiq etish boshlangan.

Bugungi kunda mamlakatimiz aholisining turmush darajasini yaxshilash maqsadida bir qancha ishlar olib borilmoqda. Lekin shunga qaramasdan aholini sifatli oziq-ovqat mahsulotlari bilan ta'minlashda bir qancha muammolar yuzaga kelmoqda. Bularning ichida donli ekinlardan olinadigan sifatli un va un mahsulotlari alohida o'rin tutadi. Shuning uchun don ishlab chiqarishni ko'paytirish va aholini sifatli don mahsulotlariga

bo'lgan ehtiyojini qondirish bugungi kundagi dolzarb masalalardan biri bo'lib hisoblanadi.

Bundan tashqari bugungi kunda dunyo aholisining katta qismida temir mikroelementi yetishmasligi natijasida kamqonlik kasalligi aniqlangan.

Buning asosiy sabablaridan bittasi donli ekinlardan olinadigan oziq-ovqat mahsulotlari tarkibida inson organizmi uchun kerakli bo'lgan makro va mikroelementlarning yetishmasligidir [5].

Bunday mikroelementlardan bittasi bu rux (Zn) elementidir. Rux (Zn) barcha hujayralarning normal faoliyati uchun zarur bo'lgan mikroelement bo'lib, 300 ta turli oqsillar ruxni kofaktor sifatida ishlatadi. Urtacha odam (70 kg) organizmida 3,0 g rux bulishi kerak. 1



sutkada 12-50 mg Zn yetishmasligi natijasida anemiya, allergiya, dermatit, ishtahani pasayishi, ko'z ko'rishini buzilishi, soch to'kilishi, immunitetni pasayishi kuzatiladi. Rux tanqisligini kechirgan odamlarda doimiy shamollashlar, o'g'il bolalarda jinsiy balog'atga yetishni kechikishi, spermatozoidlar rivojlanmasligi, ayollarda homilani muddatdan oldin va o'ta nimjon tug'ilishi, qandli diabet kasalliklari, yaralarning tez tuzalmasligi kuzatiladi. Yana shuningdek, rux tanqisligi organizmga ortiqcha miqdorda mis kadmiy, qo'rg'oshin kabi radioaktiv izotoplarni kirib kelishiga olib keladi. Ayniqsa oqsil tanqisligi (yomon ovqatlanish) va surunkali alkogol iste'mol qilganda, rux ortib ketgan taqdirda organizm uchun muhim hisoblangan mis miqdori kamayadi [4].

Temir elementi inson organizmi uchun eng kerakli manba bo'lib, murakkab fiziologik jarayonlarda ishtirok etadi va eng muhim vazifalarni bajaradi. Temir moddasisiz inson organizmini tasavvur qilish qiyin. U tanadagi to'qima, suyuqliklar, ko'z ilg'amaydigan mikromolekulyar oqsillar tarkibida bo'lib, hujayralar membranasining biokimyoviy jarayonlarida ishtirok etishi, hujayralarning nafas olishida faol qatnashishi va to'qimalarda modda almashinuvi me'yorini ta'minlashda asosiy, muhim vazifalarni bajaradi [1].

Odam organizmida 4-5 gramm (4000-5000 milligramm)ga yaqin temir mikroelementi mavjud. Uning 56 foizi eritrotsitlar (qizil qon tanachalari)da, 30 foizi jigarda, taloqda, suyak ko'migida (ferritin shakli)da, 9 foizi mushaklarda (mioglobin holida), 1-2 foizi qon zardobida,

3-4 foizi teri va boshqa to'qimalarda bo'ladi [2].

Insonning temir moddasiga bo'lgan ehtiyoji uning jinsi, yoshi, tana tuzilishi va boshqalardan kelib chiqadi. Kuniga odam tanasidan 1-1,2 milligrammga yaqin temir moddasi terlash, tirnoq olish, peshob, najas, soch to'kilishi yoki olinishi natijasida yo'qotiladi. Agar ovqat bilan 1-1,2 milligramm temir moddasi organizm tomonidan o'zlashtirilib, yo'qotilganining o'rne qoplansa, temir tanqisligi rivojlanmaydi.

Temir tanqisligi kamqonligining belgilari quyidagilarda namoyon bo'ladi:

Ta'm sezishning buzilishi: kesak, bo'r, ko'mir, qog'oz, tuxum po'chog'i, xamir, choy shamasi, xom makaron, osh tuzi, tish poroshogi yoki pastasi, kalsiy glyukonat va shunga o'xshash narsalarni iste'mol qilishga rag'bat sezilishi.

Hid sezishning buzilishi: benzin, kerosin, atseton, tutun, bo'yoqlar, tamaki, zax tuproq, ba'zi gullar, ko'katlarning hidlariga rujukorlik sezilishi.

Tirnoqlarning bujmayib, deformatsiyaga uchrashi: tirnoqlar yassilanib boradi, mo'rt, sinuvchan, g'adir-budir, og'ir turlarida "qoshiqsimon" bo'lib qoladi, ayniqsa bu holat bosh barmoqda yaqqol ko'rinadi.

Disfagiya, ya'ni yutinishning qiyinlashuvi ham bunga xos belgilardan biri bo'lib, quyuq, qattiq ovqatlarni yutish qiyinlashadi. Tomoq va qizilo'ngachdan ovqat tiqilib, qiyin o'tadi. Bu holat qizilo'ngach shilliq qavatlarining temir moddasi kamayishi natijasidagi dag'allanishi tufayli kelib chiqadi.

Terining quruqlanishi va yorilishi: og'iz burchaklari bichilishi, tovon va barmoq uchi terilarining dag'allashib,



yorilishi kuchayadi, lab qurib, yorilishi avj oladi.

Sochdagi o'zgarishlar: erta oqarishi, to'kilishi, ingichkalashishi, mo'rt bo'lib sinishi, uchki qismining ikkiga ayrilishi, ya'ni sochning "gullash" belgilarida namoyon bo'ladi.

Uyqusizlik: mudroq bosishi, bosh og'rig'i, xotiraning pasayishi, aqliy faoliyatning susayishi kabi nisbiy holatlar vujudga keladi.

JSST ma'lumotlariga ko'ra, temir tanqisligi dunyodagi eng keng tarqalgan ovqatlanish buzilishidir. Temir tanqisligi va uning kamqonligi rivojlanayotgan mamlakatlarda 3,5 milliarddan ortiq odamga ta'sir qiladi.

Oxirgi 20-25 yil ichida temir tanqisligi kamqonligi dunyoda dolzarb muammoga aylandi. Olimlarning aniqlashlaricha, temir tanqisligi kamqonligida miya to'qimalaridagi hujayralar - miyelin tarkibidagi fermentlar shikastlanadi (uning shakllanishida temir moddasi ishtirok etar ekan), natijada neyronlar rivojlanishi susayadi, buning natijasi o'laroq bolalarda o'qish qobiliyati, xotirasi pasayadi, aqlan zaif o'sadi. Shuning uchun ham oxirgi vaqtlarda bu kasallik keng tarqalgan hududlarda dunyo bo'yicha aqlan zaif bolalar soni ko'payib bormoqda [6].

Shuning uchun ham temir tanqis kamqonligi, organizmda temir tanqislik holatlari, bu oddiy tibbiy muammo emas, balki umumdavlat, kelajak avlodimizning asl muammosidir va mamlakatning ijtimoiy-iqtisodiy rivojlanishiga ta'sir ko'rsatadi.

Nima uchun ajdodlarimiz, ota-bobolarimiz sog'lom, baquvvat bo'lishgan? Nega o'tmish davrlarda anemiya deb

atalgan xastalik xalqimizga hozirgi darajada ulkan tashvish keltirmagan?

Gap shundaki, o'tmishda ota-bobolarimiz tegirmon unidan tayyorlangan non iste'mol qilishgan. Qadimgi tegirmonlar shunday tartibda ishlaganki, bug'doy maydalanayotgan paytda don tarkibidagi kamqonlikning oldini oluvchi temir, rux va boshqa vitaminlar yo'q bo'lib ketmagan. Non biroz qoraroq bo'lsa-da, salomatlik uchun foydali bo'lgan. Vaqtlar o'tishi bilan taraqqiyot eski tegirmonlarni chetga surib chiqardi. Endilikda bug'doy yangi avtomatlashtirilgan tegirmonlarda un qilinadigan bo'ldi. Biroq har yaxshining bir yomoni bor deganlaridek, yangi zamonaviy tegirmonlar bug'doy po'stlog'idagi temir, rux va boshqa inson organizmi uchun zarur bo'lgan elementlarni chiqitga chiqara boshladi.

Darvoqe, un tarkibida foydali elementlar yo'qolishiga faqatgina yangi tegirmonlar emas, ekologik o'zgarishlar, tabiiy jarayonlar ham ta'sir etdi. Mutaxassislar kuzatuviga qaraganda, so'nggi 100 yil ichida g'alla ekinlaridagi foydali elementlar miqdori 40 foizdan ziyodga qisqardi. Shu bois ham, unga zaruriy mikroelementlarni qo'shish hayotiy zaruratga aylanib qoldi.

O'zbekistonda bir necha yildan beri anemiyaga karshi kurash maqsadida unni boyitish harakatlari olib borilmoqda. Osiyo Taraqqiyot banki moliyaviy ko'magi bilan ilk bor 2002 - yilda yurtimizdagi 14 ta un ishlab chiqaruvchi korxona temir va zarur vitaminlar bilan boyitilgan mahsulot ishlab chiqara boshladi.

Unni boyitish Milliy dasuridan ko'zda tutilgan maqsad shuki, endilikda tegirmonda maydalash jarayonida yo'q bo'lib ketadigan vitamin va foydali



mikroelementlar 1-navli unga qo'shiladi. Boyitish uchun aynan 1-navli un tanlangani bejiz emas. Buning sababi, yurtimizda aholi asosan 1-navli unni iste'mol qiladi.

Bir necha rivojlanayotgan mamlakatlarda donni sun'iy fortifikatsiyalash, ya'ni temir va rux elementlari bilan boyitish yo'lga qo'yilgan. Lekin bu jarayonning qimmatligi va murakkab texnik anjomlarni talab qilishi oqibatida bu usulning samarasi kam bo'lmoqda.

Eng oddiy va samarali usul bu biologik fortifikatsiyalash, ya'ni tarkibida shu elementlar ko'p bo'lgan biotiplarni izlab topish, ularni seleksiya jarayoniga jalb etib, yuqori hosilli va sifatli bo'lgan, donning endosperma qismida mikroelementlarni ko'proq to'play oladigan navlarni yetishtirishdan iboratdir.

Bu jarayonni hayotga tadbqiq etish uchun esa birinchi navbatda ushbu navlarning noqulay omillarga chidamlilik xususiyatini, fiziologiyasini va genetikasini o'rganish lozim bo'ladi.

I.Sh.Djabbarov yumshoq bug'doy navlarini yaxshilash uchun mahalliy eski navlarning nav populyatsiyalarini o'rgangan, bunda olingan natijalar quyidagilardan darak beradi. Boshqa tuman navlarini mahalliy nav populyatsiyalar bilan chatishtirish yumshoq yozgi bug'doyning belgi va sifatlarini yaxshilaydi, ular yangi yumshoq bug'doy navlari yaratishda muhim ahamiyatga ega bo'ladi. Mahalliy navlarning seleksiya uchun dastlabki material sifatida qimmatligini o'z vaqtida N.I.Vavilov aytib o'tgan "Amaliy selektsiyani boshlashdan oldin mahalliy assortimentni yaxshi bilish kerak. U

navlarni keyingi yaxshilashda dastlabki material vazifasini bajarishi zarur".

Ana shularni hisobga olgan holda biz ham bug'doy doni tarkibida ozuqa moddalar yig'ilishiga yetishtirish sharoitlari ta'sirini o'rganish maqsadida bir qancha kuzatishlar olib bordik.

Tadqiqot ob'ekti sifatida O'zbekistonning tog'li tumanlarida oldindan ekib kelingan yumshoq bug'doy navlari, Respublikada tumanlashtirilgan mahalliy va chetdan keltirilgan navlar hamda O'zbekiston seleksionerlari tomonidan yaratilayotgan yangi yumshoq bug'doy nav namunalardan foydalanildi.

Tadqiqot metodlari: Bioekologik, fiziologik, biokimyoviy va statistik tahlil. Don tarkibidagi temir va rux mikroelementlari miqdori O'zRFA Yadro fizika institutining tahlil va axborotlashtirish bo'limida "Instrumental neytron-faollashuv" tahlil uslubida qilindi.

Bugungi kunda aholi tomonidan iste'mol qilinayotgan un mahsulotlarining tarkibidagi temir va rux mikroelementining miqdorini tekshirish maqsadida Respublikaning barcha viloyat va tumanlaridan yuzdan ortiq un mahsulotlari namunalarini yig'ib kelindi. Bunda barcha bug'doy navlari bilan bir qatorda har xil sharoitda tayyorlangan un mahsulotlari ham tahlil uchun olindi. Yig'ilgan barcha namunalar SIMMIT va IKARDA xalqaro tashkilotlari yordamida markazlashgan holda tahlil qilindi.

Tahlil natijalari shuni ko'rsatdiki, respublika bo'yicha un tarkibidagi temir mikroelementining o'rtacha ko'rsatkichi 34 mg/kg ga, ruxniki esa 16 mg/kg teng ekanligi aniqlandi. Eng maksimal ko'rsatkich temir uchun 94 ga va ruxniki



33 ga teng bo'lsa, eng kam ko'rsatkich 9 va 5 mg/kg ga teng bo'ldi [7,8].

Ma'lumki qadimgi bug'doy navlari asosan mahalliy aholi qo'lidagina saqlanib qolgan bo'lib, bu navlarning urug'chiligi va navdorligi bo'yicha maxsus tanlov ishlari olib borilmagan. Natijada ko'pgina navlar aralashib ketgan. Bu navlarni izlab topish, populyatsion holatini tahlil qilish va ma'lum miqdorda tozalash hamda biotiplarga ajratish maqsadida Respublikaning Jizzax, Samarqand, Qashqadaryo va Surxondaryo viloyatlarining tog'li va chekka tumanlariga ekspeditsiyalar tashkil qilindi. Qishloq aholisi bilan savol-javob ishlari olib borish natijasida, bug'doyning bir nechta navi tanlab olindi. Bu navlar o'sib turgan dalalardan boshhoqlar yig'ildi. Har bir daladan 100-200 tagacha boshhoq yig'ilib, ular morfologiyasi bo'yicha guruhlariga ajratildi [3].

Olingan ma'lumotlarni tahlil qilganimizda shu narsa ko'rindiki, Surxondaryoning tog'li viloyatlaridan terib kelingan ba'zida Qizil bug'doy ba'zida mahalliy nom bilan Boboki deb atalgan nav juda qadimiy bo'lishiga qaramay o'zining navdorligini yo'qotmagani, sifati juda yuqori ekanligi kuzatildi.

Xuddi shunday holat Qashqadaryo va Jizzax viloyatining tog'li tumanlaridan terilgan Oq bug'doy navida ham kuzatildi. Bu nav ham o'zining tozaligi va yuqori sifatga ega ekanligi bilan boshqa navlardan ajralib turdi. Ko'pgina mahalliy navlar Sanzar, Muslimka, Qora qiltiq, Kal bug'doy kabi navlarning navdorligi ancha past

bo'lib, ko'p hollarda tumanlashgan navlar bilan aralashib ketgan. Bu holat ko'proq lalmi maydonlarda dehqonchilik qiladigan fermer xo'jaliklarida ko'proq uchraydi.

O'zbekiston aholisining asosiy ozuqa elementlaridan biri bo'lgan bug'doy unini mikroelementlar bilan sun'iy boyitishda respublikada qadimdan ekib kelingan mahalliy bug'doy navlaridan donor sifatida foydalanish mumkin ekanligi aniqlandi. Lekin bu navlarning alohida urug'chiligi yo'lga qo'yilmaganligi va hech qanday seleksion ishlar olib borilmaganligi oqibatida bir paytlar mashhur bo'lgan navlar boshqa komersial navlar bilan aralashib ketgan va yo'qolib ketish holigacha kelgan. Sobiq sovet davrida juda mashhur bo'lgan Saratov seleksiyasi bug'doy navlarida donor sifatida foydalanilgan Xivinka, Buxoro navlari esa butunlay yo'qolib ketgan. Ushbu navlarni qayta tiklash va mahalliy aholiga qaytarish maqsadida qadimiy mahalliy bug'doy navlaridan iborat bo'lgan ko'chatzor tashkil etildi. Bu ko'chatzorni tashkil etishda har bir topilgan namunadan 100 tadan 200 tagacha boshhoq yig'ilib, har bir boshhoqni alohida morfologik tahlil qilish yo'li bilan namunalar ajratib olindi.

Ajratib olingan namunalar hozirgi kunda Xorazm vohasi o'tloqi allyuvial tuproqlarida ekilib, ularni yetishtirish texnologiyasi, biokimyoviy ko'rsatkichlari va noqulay omillarga chidamlilik kabi ko'rsatkichlari ustida izlanishlar davom ettirilmoqda.

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TYPES OF BIOLOGICAL ACTIVE SUPPLEMENTARY PRODUCTS AND PRINCIPLES OF THEIR USE IN SPORT

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Humans are a part of nature, and these two are tightly connected to each other. We get the energy, water and other supplements which are necessary for our cells from nature.

So, firstly, we need oxygen or air because oxygen generates energy in cells. Secondly, we need water, because water is a universal biological environment for our cells to survive. Lastly, human body need to be provided with nutrients continuously for the formation of energy, hormones and enzymes, growth of cells, the formation of bones, joints, skin, nails and hair.

We, first, need to understand why humans need food in order to know why we use biologically active supplements on our diets.

1. For power. Carbohydrates and fats, and in some cases proteins, produce energy in the body or, as a result of their digestion, glucose which provides energy for cells is produced.

2. As a building block. With protein, fat and cholesterol, the body builds cells and repairs damaged ones. For example, calcium and phosphorus builds bone

tissues, and cholesterol originates hormones.

3. To manage life processes. Food contains thousands of substances that control and help to regulate all vital processes in the body. For example, when free radicals made up of an oxygen atom initiate a cell-killing reaction, antioxidants preserve those cells. Also, when the activity of immune cells decreases due to fermentopathy and metabolism slows down, vitamins, minerals and plant enzymes help to restore these processes.

4. To enjoy. When we satisfy our hunger, the hormones of pleasure in the blood will increase automatically as well as our mood. However, in addition to this, the modern food industry has found ways to artificially interfere in the process of finding pleasure. Unfortunately, most people eat for only this purpose.

The words of Hippocrates told about 3,000 years ago, have not lost their value until today: "Let your food be your medicine, let your medicine be your food."

There have recently been the cases of doping in sports related to the



consumption of biologically active substances.

The use of biologically active supplements in sports began in the mid-1990s and has become a large-scale business. Initially, their use among bodybuilders increased, and gradually shifted to other sports. At present, it is impossible to list all the products produced in the market of biologically active additives.

The problem with biologically active supplements is that their production is not as carefully managed as drugs. Theoretically, they should be used infrequently and as a supplement to a nutritious diet, unfortunately, some people try to replace them with the most nutritious diet. Why they should rarely be used? We can get enough energy and nutrients to the body through a good diet and only in some cases (athletes with an energy expenditure of more than 5000 kcal per day) through biologically active supplements.

The second turning point in the food supplement industry was the test results of several tennis players at Wimbledon at Nandrolone (a long-acting anabolic steroid). When nandrolone was simultaneously detected in the analytical responses of several athletes, they found out what happened. The investigation revealed that athletes were given biologically active supplements consisting of nandrolone, by the tournament organizers themselves.

In 2001, a guide to the International Olympic Committee was published, which the researches of the staff of the University of Cologne (Germany) are included.

More than 600 different biologically active supplements ordered online from more

than 25 countries were studied in this research. 25% of all biologically active test supplements ordered from the Netherlands, and about 20 % of test supplements ordered from the United Kingdom, the United States and Austria contained compounds of banned substances in sports. These results have led to an increase in doping scandals as a result of the consumption of biologically active additives, which has forced us to pay more attention to the problem.

How did developed countries start solving the problem?

In the late 90's, a deep study of the effectiveness of biologically active additives and their effects began. Professor Luis Burke of the Australian Sports Institute and Professor Roland Moghan of the University of Loughborough have made significant contributions to this study.

According to current research, all biologically active supplements can be divided into **3 categories**:

Group 1 - biologically active additives with proven effectiveness;

Group 2 - biologically active additives that require additional evidence;

Group 3 - biologically active additives that have proven to be completely ineffective in research.

The first group includes biologically active supplements that are effective, including creatine, bicarbonate and caffeine. However, there is not enough information about the remaining groups.

Misconceptions about the effectiveness of biologically active supplements are sometimes surprising. For example, when taking samples for doping, athletes fill out a questionnaire, which must include biologically active substances used in



addition to drugs. It turned out that in such a survey, one athlete showed 18 biologically active supplements! Of course, this is not something we can learn from.

So how was this problem solved? An example is Britain. There is currently a WADA-accredited laboratory in London, UK. In 2006, when the United Kingdom had got the right to host the Olympic Games, the management of the laboratory began testing biologically active additives. As the problem of contamination of food additives with banned substances has become a serious problem in sports clubs, laboratory leaders found it expedient to test biologically active additives and develop a certificate confirming their safety.

The BFQs safety has been guaranteed and athletes also guaranteed their safety. At the same time, all tested drugs receive a similar certificate and are placed in a database on the laboratory website. Thus, every athlete who buys safe biologically active supplements can visit the site and make sure that this supplement has been tested and that it does not contain banned compounds.

Biological by-products in the diet of athletes can be used for the **following purposes:**

- regulations of nutrition, rapid replacement of nutrient deficiencies in the body with food, as well as the introduction of rational nutrition in accordance with the concept of nutrients and energy;
- Satisfaction of the body's physiological need for nutrients during illness, as well as the restoration of metabolically damaged organs in the pathological process.

BFQs are divided into the following groups in terms of their effectiveness and impact

on the athlete's body; nucleotides, antioxidants, adaptogens and nootropics.

Nucleotides are drugs that have a plastic effect, promote cell regeneration and regenerative processes inside those cells; they also have anabolic properties and anti-dystrophic properties. Nucleotides affect carbohydrate metabolism, helps to replenish enzyme and coenzyme deficiencies, improves metabolism in the heart and skeletal muscle. This group of drugs plays an important role in the prevention and treatment of myocardial dystrophy, which develops as a result of physical exertion. This group includes potassium orotate, riboxin, ATF, protein compounds and nutritional supplements. They preserve the necessary energy, quickly reacts the metabolic reactions and is rapidly absorbed and consumed in the Krebs cycle, increases the activity of enzymes and coenzymes, reduces the amount of harmful radicals formed in the body at high loads. This group of drugs includes carnitine chloride, picamilon, succinic acid, panangin, nootropil.

Antioxidants (vitamin E, tocopherols, etc.) decreases the effect of harmful substances formed in excess of lipids during long-term exercises.

Adaptogens are mainly plant-derived biostimulants (ginseng, Chinese lemon, levziya (deer root)). These include complex drugs, too. They increase the body's resistance to various extreme effects and help to restore functional changes in the load. It is used effectively in fast and strong loads, with tension, and in sports that require extreme attention and complex coordination.

Nootropics are drugs that have a direct activating effect on the integrative mechanisms of the brain, improve memory,



stimulate thinking, increase brain's resistance to stress. Nootropics not only improve coordination, but also accelerate the recovery of lost skills and techniques in sports.

Because nootropic drugs affect the metabolic process, they are included in the list of "metabolic therapy" drugs. These drugs should not be taken in the evening and during psychomotor agitation.

Today, biologically active supplements are divided into three groups. These include: eubiotics, nutraceuticals, and parapharmaceuticals.

Eubiotics are biological food supplements, the components of which are products of the vital activity of microorganisms and bacteria, the beneficial effect of Eubiotics is the management of the micro-flora of the gastrointestinal tract.

In turn, they are divided into 3 groups: probiotics, synbiotics, prebiotics.

Probiotics are microbial drugs, and prebiotics are not bacterial. Synbiotics are drugs that are obtained as a result of a reasonable combination of pro and prebiotics. The most common probiotics are bifidobacteria and lactobacilli. They are used to make yogurt, kefir, bifidok, ice cream or various food products. Probiotics are used to prevent microbial imbalance in the body, as well as for inflammation of the intestine, gastritis, acute intestinal infections and others.

Various carbohydrates are called prebiotics. For example, inulin, lactosul, galacto-, fructo-, oligosaccharides. Although prebiotics are not digested or absorbed in the upper parts of the digestive tract, they can cause active growth and proliferation of bifidobacteria and lactobacilli.

The next group of food supplements is **nutraceuticals** which are used to replenish important nutrients in the human body, such as vitamins, macro- and micronutrients, amino acids, nutritional supplements, and vitamin-like substances.

Biologically active supplements of this group have no contraindications, side effects and are used for prophylactic purposes. They have a general healing effect.

Unlike other BFQs, they are obtained not through a pharmaceutical route but through food technology. They improve the absorption of nutrients, provide homeostasis, enhance the processes of removal of toxins from the body, improve the regenerative ability of tissues and metabolism.

Nutritional drugs are divided into the following groups:

- Sources of amino acids;
- sources of fatty acids, fat-soluble lipids and lipids;
- sources of carbohydrates;
- Sources of dietary fiber;
- sources of minerals;
- Sources of water-soluble vitamins.

Sources of amino acids: in most cases they are produced in the form of easily digestible, ready-made dry carbohydrate-protein-fat-mineral-vitamin mixtures, which contain 97% digestible milk, egg, soy proteins. Their main function is to supplement the traditional diet with essential amino acids (methionine, lysine). They are often used by athletes for rapid growth of muscle mass, as well as in diseases of the liver and blood vessels.

Parapharmaceuticals are a group of substances similar to naturally prepared drugs that have a philological rather than a



pharmacological effect on the functioning of organs and organ systems.

Parapharmaceuticals differ from medicines in terms of low doses, but they are taken only under a doctor's prescription.

These include polysaccharides, bioflavonoids, glycosides, saponins, organic acids, alkaloids, essential oils, namely, drugs derived from plant and animal sources or their synthetic analogues.

They have a positive effect on the activity of the central nervous system and the microbiocenosis of the gastrointestinal tract.

In summary, the ambiguity of the content of many biologically active supplements (in many cases, the fact that the content is not

specified by the manufacturer) and the effect of these biologically active supplements on athletes as doping, adversely affects will prevent us from using these supplements.

Many medicines have a great effect on the body. Misuse of these drugs, malnutrition, overdose can lead to negative effects on the health of athletes and worsen their ability to work. Therefore, while applying them, it is necessary to take into account the individual condition of athletes, age, gender, health, physical development, the specific condition of the body, the stage and nature of training or competition. These supplements should be used with the doctor's prescription.

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UROLOGIK KASALLIKLARNI DAVOLASH VA TASHXISLASH

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KALIT SO'ZLAR

*Urologik kasalliklar,
surunkali yallig'lanishi
kechishi, diagnostika va
profilaktikasi*

ANNOTATSIYA

Siydik- tanosil a'zolari kasalliklar hozir kunda juda ko'p uchramoqda. Ushbu maqolada urologik kasalliklar va ularni tashxislash hamda ularni davolash va parvarishlash haqida so'z yuritilgan.

Erkaklardagi urologik kasalliklar tibbiyot - urologiyaning maxsus uchastkasi hisobga olinadi. Erkaklar urologiyasi siydik chiqarilish organlarining kasalliklarini, ularning alomatlari, ayanchli usullari, davolash usullari va ogohlantirish usullarini o'rganadi. Urologiya tarkibida faqat buyrak kasalliklarini qamrab olgan qo'shimcha tarmoq - nefrologiya mavjud. Aslida, urologiya jarrohlik intizomidir, u asosan urologik kasalliklarni davolashning jarrohlik usullari - bu urologiya nefrologiyadan tubdan farq qiladi.

Urologik kasalliklar odamning hayotini jiddiy ravishda murakkablashtirishi mumkin, farovonligini yomonlashtiradi, ijtimoiy moslashuv va o'ziga ishonchni kamaytiradi, o'z-o'zini hurmat qilish va kuchlariga ishonish. 2/3 holatda urologik kasalliklar, erkaklar asemptomatikasida uchraydi, shuning uchun imtiyozsiz progressiya va surunkali shaklga o'tish.

Bundan tashqari, ko'pincha erkaklar, hatto ularning kasalligini bilish, uni davolashni boshlamaydilar va hatto so'rovnoma o'tmanglar. Buning sababi jamiyat oldida oddiy sharmandalik, qo'rquv yoki bayaldan foydalanish va namunaga ruxsat berish odati bo'lishi mumkin. Doktor bilan kampaniyani kuchaytirish va erkaklarda urologik kasalliklarni davolash ko'pincha depozitlarga olib keladi, shuning uchun dastlabki bosqichlarda davolanish va davolash muammolaridan kelib chiqishi va muammoni osonlikcha qutulishini eslash kerak.

Muammoning belgilari

Ko'p holatlarda erkaklardagi urologik kasalliklar hech qanday alomatlarisiz davom etadi va ko'pincha e'tiborga olinmaydi. Biroq, eng keng tarqalgan alomatlar mavjud, ularning shaklida eng ko'p urologik kasalliklar aniq klinik rasmga o'tadi:



Erkaklardagi urogenital tizimning kasalliklari har doim ham alomatlarga ega emas va o'zlarini og'riqli hissiyotlarda va siyishlarning buzilishlarida ham namoyon qilishi mumkin.

Agar siz faol jinsiy hayotni faol yashasangiz va aniqlangan bo'lsangiz, dastlabki davolash usulida boshlang'ich davolanishni davom ettirishga yordam beradi.

Bemorning asosiy ekspertizasi tashxis qo'yishning ustuvor yo'nalishi va keyingi tibbiy harakatlarning ta'rifi uchun zarurdir. Tashqi jinsiy a'zolarini tekshirish sizga yallig'lanish hodisalari mavjudligini, shuningdek jinsiy yuqumli kasalliklar bilan ta'minlanishiga imkon beradi. Bundan tashqari, urologik inspeksiya tarkibida o'simta jarayonini bartaraf etish uchun ichak orqali majburiy prostata mavjud.

Urologning aniq tashxisini shakllantirish uchun uretra insultini tahlil qilish uchun urib urishi kerak. Smear, patogen mikroflorning mavjudligi, uning tabiati va patogenika darajasini aniqlash uchun laboratoriya tadqiqotlari uchun zarurdir. Urogenital smear sizga yallig'lanish jarayoni borligini va erkakning genitan tizimidagi yashirin infektsiyani aniqlash imkonini beradi. Bundan tashqari, uretraning sulumu undagi bakteriya turlarini va ularning miqdorini aniqlashga imkon beradi, shuning uchun shifokor ushbu mikrofloriga nisbatan samarali bo'lgan ushbu dorilarni davolashni buyuradi.

Prostatitni davolash tarkibiga antibiotiklar, alfa-adrenoboblosli giyohvand moddalar, immunoshimulyator va asosan prostata bezining massaji kiradi. Prostate massaji uning qon ta'minoti va ovqatlanishini yaxshilash uchun zarurdir. Prostata massaji surunkali yallig'lanish paytida, uning

funktsiyasini tiklayotganda ishlatiladi. Prostata massaj to'g'ri ichak orqali amalga oshiriladi, bemor yon tomonda yotadi, siydik pufagi to'ldirilishi kerak. Prostata massaji diagnostika maqsadida tuzilishi mumkin - bezning chetini olish uchun. Prostata bezining o'smali shikastlanishi bilan uning massaji kontrendikedir. Prostata massaji faqat klinikalar sharoitida tajribali shifokorga malakali bo'lishi mumkin.

Dori-darmonni davolash antibakterial terapiyani ta'minlaydi.

Kistit, piyelonefrit va urolitiazni davolash antibakterial dorilar va simptomatik davolash bo'yicha har tomonlama amalga oshiriladi. Siydikni o'g'irlash holatlarida, u o'zini majburan siydikni singdirishdan himoya qiladigan erkaklar uchun urologik toshkakkasit sifatida mavjudligini isbotladi. Erkaklar uchun urologik laynerlar ushbu kasallikdan aziyat chekayotgan bemorlarni ijtimoiylashishiga yordam berish uchun mo'ljallangan.

Erkaklarning barcha urologik kasalliklarini davolash to'g'ri muvozanatli ovqatlanish, hayot tarzi, jinsiy faoliyat, kun rejimini, kun rejimini yaratish va shaxsiy gigiena bilan ehtiyotkorlik bilan birlashtirish kerak.

Urologik patologiya ko'pincha erkakning noqulaylikdan boshlanib, farovonlikning yomonlashishi va o'z-o'zini hurmat qilish va o'ziga bo'lgan ishonchni yo'qotish bilan yakunlanadi.

Ushbu kasalliklar holatlarining yarmidan ko'pi erkaklarga hech qanday alomatlarisiz o'tkaziladi, o'sishi va asta-sekin surunkali kursga ega bo'ladilar. Bundan tashqari, ko'plab erkaklar, hanuzgacha qo'rquv, noqulaylik, sharmandalik, uyat, uyat yoki



kasallikning yaqinlashishi uchun
shifokorga murojaat qilishmaydi.

Erkaklar urologik kasalliklari

Yosh guruhidagi erkaklar 18 dan 45
yoshgacha bo'lgan erkaklar ko'pincha
urologik patologiyasidan ko'proq azob
chekishadi:

1. Taniqli kasalliklar:

-Sifilis

-xalal

- trichomoniya va boshqa tanosil
infektsiyalari.

2. Yallig'lanish kasalliklari. Joylardagi joylar:

-uretra;

-haddan tashqari go'sht va jinsiy boshi;

-prostata;

-moyaklar va ularning qo'shimchalari;

-siydik pufagi;

-Parenxima buyrak va stakan tayyorlash
tizimi;

3. *Buyraklarda tosh shakllanishi bilan
bog'liq kasallik (UrolitiAsiais)*

4. Intim va reproduktiv soha kasalliklari:

-buzilish va ereksiya etishmasligi;

- Reprodukativ funktsiyani avlodga olib bora
olmaslikka olib keladigan

5. Onkologik patologiya:

- prostate Adenoma (giyohvandlikning
prostata prostasi) va boshqalar.

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QADIMIY VA TUMANLASHGAN BUG'DOY NAV NAMUNALARI DONIDA TEMIR VA RUX MIKROELEMENTLARI MIQDORINI TAHLIL QILISH

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KALIT SO'ZLAR

mikroelement,
deformatsiya, disfagiya,
miyelin, anemiya,
fortifikatsiya, genetik
barqarorlik, populyatsiya,
urug'chilik, donor.

ANNOTATSIYA

O'zbekistonda tumanlashgan va qadimdan ekib kelinayotgan bug'doy navlarining donidagi inson salomatligi uchun muhim bo'lgan mikroelementlar - temir va ruxning miqdori skrining qilindi. Qashqadaryo va Surxondaryo viloyatlarining tog'li zonalariga ekspeditsiya uyushtirilib, qadimiy nav na'munalari yig'ib kelindi. Skrining natijasida tarkibida temir mikroelementi nisbatan ko'p bo'lgan na'munalar ajratib olindi va Xorazm vohasi o'tloqi allyuvial tuproqlari sharoitida yetishtirish texnologiyasi, biokimyoviy ko'rsatkichlari va noqulay omillarga chidamlilik kabi ko'rsatkichlari ustida izlanishlar olib borilmoqda.

Respublikamizda mustaqillikning dastlabki yillaridan boshlab, hukumatimiz tomonidan aholini o'zimizda yetishtirilayotgan don va non mahsulotlariga bo'lgan ehtiyojini to'la qondirish borasida kompleks chora-tadbirlar ishlab chiqilib, ularni amaliyotga tadbqiq etish boshlangan.

Bugungi kunda mamlakatimiz aholisining turmush darajasini yaxshilash maqsadida bir qancha ishlar olib borilmoqda. Lekin shunga qaramasdan aholini sifatli oziq-ovqat mahsulotlari bilan ta'minlashda bir qancha muammolar yuzaga kelmoqda. Bularning ichida donli ekinlardan olinadigan sifatli un va un mahsulotlari alohida o'rin tutadi. Shuning uchun don ishlab chiqarishni ko'paytirish

va aholini sifatli don mahsulotlariga bo'lgan ehtiyojini qondirish bugungi kundagi dolzarb masalalardan biri bo'lib hisoblanadi.

Bundan tashqari bugungi kunda dunyo aholisining katta qismida temir mikroelementi yetishmasligi natijasida kamqonlik kasalligi aniqlangan.

Buning asosiy sabablaridan bittasi donli ekinlardan olinadigan oziq-ovqat mahsulotlari tarkibida inson organizmi uchun kerakli bo'lgan makro va mikroelementlarning yetishmasligidir [5].

Bunday mikroelementlardan bittasi bu rux (Zn) elementidir. Rux (Zn) barcha hujayralarning normal faoliyati uchun zarur bo'lgan mikroelement bo'lib, 300 ta turli oqsillar ruxni kofaktor sifatida



ishlatadi. Urtacha odam (70 kg) organizmida 3,0 g rux bulishi kerak. 1 sutkada 12-50 mg Zn yetishmasligi natijasida anemiya, allergiya, dermatit, ishtahani pasayishi, ko'z ko'rishini buzilishi, soch to'kilishi, immunitetni pasayishi kuzatiladi. Rux tanqisligini kechirgan odamlarda doimiy shamollashlar, o'g'il bolalarda jinsiy balog'atga yetishni kechikishi, spermatozoidlar rivojlanmasligi, ayollarda homilani muddatdan oldin va o'ta nimjon tug'ilishi, qandli diabet kasalliklari, yaralarning tez tuzalmasligi kuzatiladi. Yana shuningdek, rux tanqisligi organizmga ortiqcha miqdorda mis kadmiy, qo'rg'oshin kabi radioaktiv izotoplarni kirib kelishiga olib keladi. Ayniqsa oqsil tanqisligi (yomon ovqatlanish) va surunkali alkogol iste'mol qilganda, rux ortib ketgan taqdirda organizm uchun muhim hisoblangan mis miqdori kamayadi [4].

Temir elementi inson organizmi uchun eng kerakli manba bo'lib, murakkab fiziologik jarayonlarda ishtirok etadi va eng muhim vazifalarni bajaradi. Temir moddasisiz inson organizmini tasavvur qilish qiyin. U tanadagi to'qima, suyuqliklar, ko'z ilg'amaydigan mikromolekulyar oqsillar tarkibida bo'lib, hujayralar membranasining biokimyoviy jarayonlarida ishtirok etishi, hujayralarning nafas olishida faol qatnashishi va to'qimalarda modda almashinuvi me'yorini ta'minlashda asosiy, muhim vazifalarni bajaradi [1].

Odam organizmida 4-5 gramm (4000-5000 milligramm)ga yaqin temir mikroelementi mavjud. Uning 56 foizi eritrotsitlar (qizil qon tanachalari)da, 30 foizi jigarda, taloqda, suyak ko'migida

(ferritin shakli)da, 9 foizi mushaklarda (mioglobin holida), 1-2 foizi qon zardobida, 3-4 foizi teri va boshqa to'qimalarda bo'ladi [2].

Insonning temir moddasiga bo'lgan ehtiyoji uning jinsi, yoshi, tana tuzilishi va boshqalardan kelib chiqadi. Kuniga odam tanasidan 1-1,2 milligrammga yaqin temir moddasi terlash, tirnoq olish, peshob, najas, soch to'kilishi yoki olinishi natijasida yo'qotiladi. Agar ovqat bilan 1-1,2 milligramm temir moddasi organizm tomonidan o'zlashtirilib, yo'qotilganining o'rne qoplansa, temir tanqisligi rivojlanmaydi.

Temir tanqisligi kamqonligining belgilari quyidagilarda namoyon bo'ladi:

Ta'm sezishning buzilishi: kesak, bo'r, ko'mir, qog'oz, tuxum po'chog'i, xamir, choy shamasi, xom makaron, osh tuzi, tish poroshogi yoki pastasi, kalsiy glyukonat va shunga o'xshash narsalarni iste'mol qilishga rag'bat sezilishi.

Hid sezishning buzilishi: benzin, kerosin, atseton, tutun, bo'yoqlar, tamaki, zax tuproq, ba'zi gullar, ko'katlarning hidlariga rujukorlik sezilishi.

Tirnoqlarning bujmayib, deformatsiyaga uchrashi: tirnoqlar yassilanib boradi, mo'rt, sinuvchan, g'adir-budir, og'ir turlarida "qoshiqsimon" bo'lib qoladi, ayniqsa bu holat bosh barmoqda yaqqol ko'rinadi.

Disfagiya, ya'ni yutinishning qiyinlashuvi ham bunga xos belgilardan biri bo'lib, quyuq, qattiq ovqatlarni yutish qiyinlashadi. Tomoq va qizilo'ngachdan ovqat tiqilib, qiyin o'tadi. Bu holat qizilo'ngach shilliq qavatlarining temir moddasi kamayishi natijasidagi dag'allanishi tufayli kelib chiqadi.



Terining quruqlanishi va yorilishi: og'iz burchaklari bichilishi, tovon va barmoq uchi terilarining dag'allashib, yorilishi kuchayadi, lab qurib, yorilishi avj oladi.

Sochdagi o'zgarishlar: erta oqarishi, to'kilishi, ingichkalashishi, mo'rt bo'lib sinishi, uchki qismining ikkiga ayrilishi, ya'ni sochning "gullash" belgilarida namoyon bo'ladi.

Uyqusizlik: mudroq bosishi, bosh og'rig'i, xotiraning pasayishi, aqliy faoliyatning susayishi kabi nisbiy holatlar vujudga keladi.

JSST ma'lumotlariga ko'ra, temir tanqisligi dunyodagi eng keng tarqalgan ovqatlanish buzilishidir. Temir tanqisligi va uning kamqonligi rivojlanayotgan mamlakatlarda 3,5 milliarddan ortiq odamga ta'sir qiladi.

Oxirgi 20-25 yil ichida temir tanqisligi kamqonligi dunyoda dolzarb muammoga aylandi. Olimlarning aniqlashlaricha, temir tanqisligi kamqonligida miya to'qimalaridagi hujayralar - miyelin tarkibidagi fermentlar shikastlanadi (uning shakllanishida temir moddasi ishtirok etar ekan), natijada neyronlar rivojlanishi susayadi, buning natijasi o'laroq bolalarda o'qish qobiliyati, xotirasi pasayadi, aqlan zaif o'sadi. Shuning uchun ham oxirgi vaqtlarda bu kasallik keng tarqalgan hududlarda dunyo bo'yicha aqlan zaif bolalar soni ko'payib bormoqda [6].

Shuning uchun ham temir tanqis kamqonligi, organizmda temir tanqislik holatlari, bu oddiy tibbiy muammo emas, balki umumdavlat, kelajak avlodimizning asl muammosidir va mamlakatning ijtimoiy-iqtisodiy rivojlanishiga ta'sir ko'rsatadi.

Nima uchun ajdodlarimiz, otabobolarimiz sog'lom, baquvvat bo'lishgan? Nega o'tmish davrlarda anemiya deb atalgan xastalik xalqimizga hozirgi darajada ulkan tashvish keltirmagan?

Gap shundaki, o'tmishda otabobolarimiz tegirmon unidan tayyorlangan non iste'mol qilishgan. Qadimgi tegirmonlar shunday tartibda ishlaganki, bug'doy maydalanayotgan paytda don tarkibidagi kamqonlikning oldini oluvchi temir, rux va boshqa vitaminlar yo'q bo'lib ketmagan. Non biroz qoraroq bo'lsa-da, salomatlik uchun foydali bo'lgan. Vaqtlar o'tishi bilan taraqqiyot eski tegirmonlarni chetga surib chiqardi. Endilikda bug'doy yangi avtomatlashtirilgan tegirmonlarda un qilinadigan bo'ldi. Biroq har yaxshining bir yomoni bor deganlaridek, yangi zamonaviy tegirmonlar bug'doy po'stlog'idagi temir, rux va boshqa inson organizmi uchun zarur bo'lgan elementlarni chiqitga chiqara boshladi.

Darvoqe, un tarkibida foydali elementlar yo'qolishiga faqatgina yangi tegirmonlar emas, ekologik o'zgarishlar, tabiiy jarayonlar ham ta'sir etdi. Mutaxassislar kuzatuviga qaraganda, so'nggi 100 yil ichida g'alla ekinlaridagi foydali elementlar miqdori 40 foizdan ziyodga qisqardi. Shu bois ham, unga zaruriy mikroelementlarni qo'shish hayotiy zaruratga aylanib qoldi.

O'zbekistonda bir necha yildan beri anemiyaga karshi kurash maqsadida unni boyitish harakatlari olib borilmoqda. Osiyo Taraqqiyot banki moliyaviy ko'magi bilan ilk bor 2002 - yilda yurtimizdagi 14 ta un ishlab chiqaruvchi korxona temir va zarur vitaminlar bilan boyitilgan mahsulot ishlab chiqara boshladi.



Unni boyitish Milliy dasuridan ko'zda tutilgan maqsad shuki, endilikda tegirmonda maydalash jarayonida yo'q bo'lib ketadigan vitamin va foydali mikroelementlar 1-navli unga qo'shiladi. Boyitish uchun aynan 1-navli un tanlangani bejiz emas. Buning sababi, yurtimizda aholi asosan 1-navli unni iste'mol qiladi.

Bir necha rivojlanayotgan mamlakatlarda donni sun'iy fortifikatsiyalash, ya'ni temir va rux elementlari bilan boyitish yo'lga qo'yilgan. Lekin bu jarayonning qimmatligi va murakkab texnik anjomlarni talab qilishi oqibatida bu usulning samarasi kam bo'lmoqda.

Eng oddiy va samarali usul bu biologik fortifikatsiyalash, ya'ni tarkibida shu elementlar ko'p bo'lgan biotiplarni izlab topish, ularni seleksiya jarayoniga jalb etib, yuqori hosilli va sifatli bo'lgan, donning endosperma qismida mikroelementlarni ko'proq to'play oladigan navlarni yetishtirishdan iboratdir.

Bu jarayonni hayotga tadbqiq etish uchun esa birinchi navbatda ushbu navlarning noqulay omillarga chidamlilik xususiyatini, fiziologiyasini va genetikasini o'rganish lozim bo'ladi.

I.Sh.Djabbarov yumshoq bug'doy navlarini yaxshilash uchun mahalliy eski navlarning nav populyatsiyalarini o'rgangan, bunda olingan natijalar quyidagilardan darak beradi. Boshqa tuman navlarini mahalliy nav populyatsiyalar bilan chatishtirish yumshoq yozgi bug'doyning belgi va sifatlarini yaxshilaydi, ular yangi yumshoq bug'doy navlari yaratishda muhim ahamiyatga ega bo'ladi. Mahalliy navlarning seleksiya uchun dastlabki material sifatida qimmatligini o'z vaqtida

N.I.Vavilov aytib o'tgan "Amaliy selektsiyani boshlashdan oldin mahalliy assortimentni yaxshi bilish kerak. U navlarni keyingi yaxshilashda dastlabki material vazifasini bajarishi zarur".

Ana shularni hisobga olgan holda biz ham bug'doy doni tarkibida ozuqa moddalar yig'ilishiga yetishtirish sharoitlari ta'sirini o'rganish maqsadida bir qancha kuzatishlar olib bordik.

Tadqiqot ob'ekti sifatida O'zbekistonning tog'li tumanlarida oldindan ekib kelingan yumshoq bug'doy navlari, Respublikada tumanlashtirilgan mahalliy va chetdan keltirilgan navlar hamda O'zbekiston seleksionerlari tomonidan yaratilayotgan yangi yumshoq bug'doy nav namunalardan foydalanildi.

Tadqiqot metodlari: Bioekologik, fiziologik, biokimyoviy va statistik tahlil. Don tarkibidagi temir va rux mikroelementlari miqdori O'zRFA Yadro fizika institutining tahlil va axborotlashtirish bo'limida "Instrumental neytron-faollashuv" tahlil uslubida qilindi.

Bugungi kunda aholi tomonidan iste'mol qilinayotgan un mahsulotlarining tarkibidagi temir va rux mikroelementining miqdorini tekshirish maqsadida Respublikaning barcha viloyat va tumanlaridan yuzdan ortiq un mahsulotlari namunalarini yig'ib kelindi. Bunda barcha bug'doy navlari bilan bir qatorda har xil sharoitda tayyorlangan un mahsulotlari ham tahlil uchun olindi. Yig'ilgan barcha namunalar SIMMIT va IKARDA xalqaro tashkilotlari yordamida markazlashgan holda tahlil qilindi.

Tahlil natijalari shuni ko'rsatdiki, respublika bo'yicha un tarkibidagi temir mikroelementining o'rtacha ko'rsatkichi 34 mg/kg ga, ruxniki esa 16 mg/kg teng



ekanligi aniqlandi. Eng maksimal ko'rsatkich temir uchun 94 ga va ruxniki 33 ga teng bo'lsa, eng kam ko'rsatkich 9 va 5 mg/kg ga teng bo'ldi [7,8].

Ma'lumki qadimgi bug'doy navlari asosan mahalliy aholi qo'lidagina saqlanib qolgan bo'lib, bu navlarning urug'chiligi va navdorligi bo'yicha maxsus tanlov ishlari olib borilmagan. Natijada ko'pgina navlar aralashib ketgan. Bu navlarni izlab topish, populyatsion holatini tahlil qilish va ma'lum miqdorda tozalash hamda biotiplarga ajratish maqsadida Respublikaning Jizzax, Samarqand, Qashqadaryo va Surxondaryo viloyatlarining tog'li va chekka tumanlariga ekspeditsiyalar tashkil qilindi. Qishloq aholisi bilan savol-javob ishlari olib borish natijasida, bug'doyning bir nechta navi tanlab olindi. Bu navlar o'sib turgan dalalardan boshloqlar yig'ildi. Har bir daladan 100-200 tagacha boshloq yig'ilib, ular morfologiyasi bo'yicha guruhlariga ajratildi [3].

Olingan ma'lumotlarni tahlil qilganimizda shu narsa ko'rindiki, Surxondaryoning tog'li viloyatlaridan terib kelingan ba'zida Qizil bug'doy ba'zida mahalliy nom bilan Boboki deb atalgan nav juda qadimiy bo'lishiga qaramay o'zining navdorligini yo'qotmagani, sifati juda yuqori ekanligi kuzatildi.

Xuddi shunday holat Qashqadaryo va Jizzax viloyatining tog'li tumanlaridan terilgan Oq bug'doy navida ham kuzatildi. Bu nav ham o'zining tozaligi va yuqori sifatga ega ekanligi bilan boshqa navlardan ajralib turdi. Ko'pgina mahalliy navlar Sanzar, Muslimka, Qora qiltiq, Kal bug'doy

kabi navlarning navdorligi ancha past bo'lib, ko'p hollarda tumanlashgan navlar bilan aralashib ketgan. Bu holat ko'proq lalmi maydonlarda dehqonchilik qiladigan fermer xo'jaliklarida ko'proq uchraydi.

O'zbekiston aholisining asosiy ozuqa elementlaridan biri bo'lgan bug'doy unini mikroelementlar bilan sun'iy boyitishda respublikada qadimdan ekib kelingan mahalliy bug'doy navlaridan donor sifatida foydalanish mumkin ekanligi aniqlandi. Lekin bu navlarning alohida urug'chiligi yo'lga qo'yilmaganligi va hech qanday seleksion ishlar olib borilmaganligi oqibatida bir paytlar mashhur bo'lgan navlar boshqa komersial navlar bilan aralashib ketgan va yo'qolib ketish holigacha kelgan. Sobiq sovet davrida juda mashhur bo'lgan Saratov seleksiyasi bug'doy navlarida donor sifatida foydalanilgan Xivinka, Buxoro navlari esa butunlay yo'qolib ketgan. Ushbu navlarni qayta tiklash va mahalliy aholiga qaytarish maqsadida qadimiy mahalliy bug'doy navlaridan iborat bo'lgan ko'chatzor tashkil etildi. Bu ko'chatzorni tashkil etishda har bir topilgan namunadan 100 tadan 200 tagacha boshloq yig'ilib, har bir boshloqni alohida morfologik tahlil qilish yo'li bilan namunalar ajratib olindi.

Ajratib olingan namunalar hozirgi kunda Xorazm vohasi o'tloqi allyuvial tuproqlarida ekilib, ularni yetishtirish texnologiyasi, biokimyoviy ko'rsatkichlari va noqulay omillarga chidamlilik kabi ko'rsatkichlari ustida izlanishlar davom ettirilmoqda.

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INTERACTION OF LASER RADIATION WITH ATOMS

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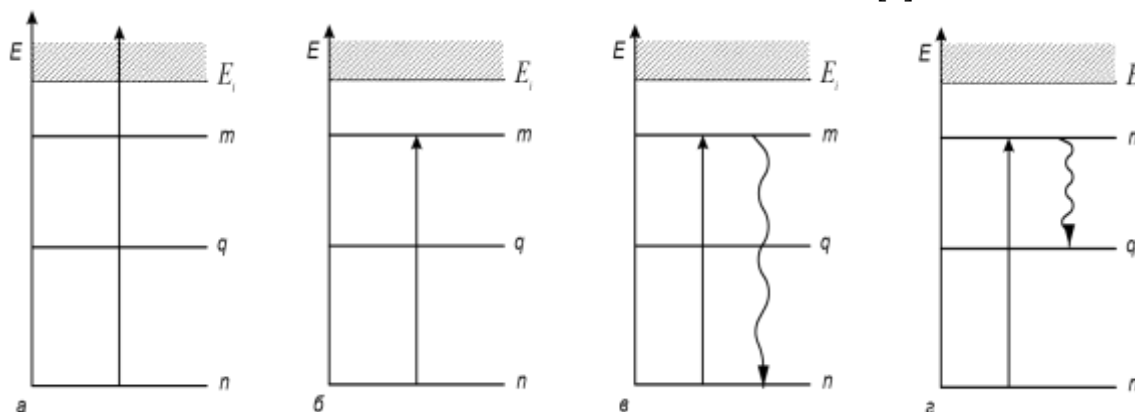
single-photon processes,
multiphoton processes,
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ABSTRACT

The article presents multiphoton (nonlinear) processes in liquids and modern views on single-photon processes as a result of the implementation of the limiting case when the interaction occurs at low light intensity

The law of the photoelectric effect opened the study of one of the main processes that occur during the interaction of electromagnetic radiation with matter. The atomic photoelectric effect, also called the process of atom photoionization, is a variant of the photoelectric effect at the atomic level of radiation interaction.

The main feature of the process of photoionization of an atom is its one-photon nature - the elementary act of detachment of an electron from an atom occurs as a result of the absorption of one photon. Accordingly, at the modern level, this process is also called single-photon ionization of an atom [2].



Picture 1. Schemes of single-photon processes. a - photoionization of an atom, b - photoexcitation of an atom, c - Rayleigh

scattering of light by an atom, d - Romanov scattering of light by an atom. E is the energy of an electron in an atom, E_i is the



ionization potential of an atom, n is the ground state, m , q are excited bound states of an electron in an atom, straight arrows are forced transitions of an electron as a result of photon absorption, wavy arrows are light scattered by atoms

At present, other elementary processes that occur during the interaction of light with an atom, such as photoexcitation of an atom, Rayleigh and Romanov (combined) scattering of light by an atom, have also been studied and described.

The advent of lasers gave experimenters monochromatic radiation of the optical frequency range of gigantic intensity, significantly exceeding the atomic intensity ($I_a = 3.61 \cdot 10^{16} \text{ W/cm}^2$). Accordingly, the field strength of laser

radiation significantly exceeds the atomic field strength ($F_a = 5.41 \cdot 10^9 \text{ V/cm}$). From a comparison of this value with the intensity up to laser sources of monochromatic radiation - spectral lamps - amounting to a value of the order of $1-10 \text{ W/cm}^2$, it is clear that a qualitatively new physics should arise during the interaction of laser radiation with matter.

Indeed, the use of laser radiation made it possible to discover the existence, in addition to the process of single-photon ionization of atoms, also of the process of multiphoton ionization of atoms. Foundation feature process of multiphoton ionization of an atom is the fact that the detachment of an electron from an atom occurs as a result of the absorption of several photons in one elementary act [1].

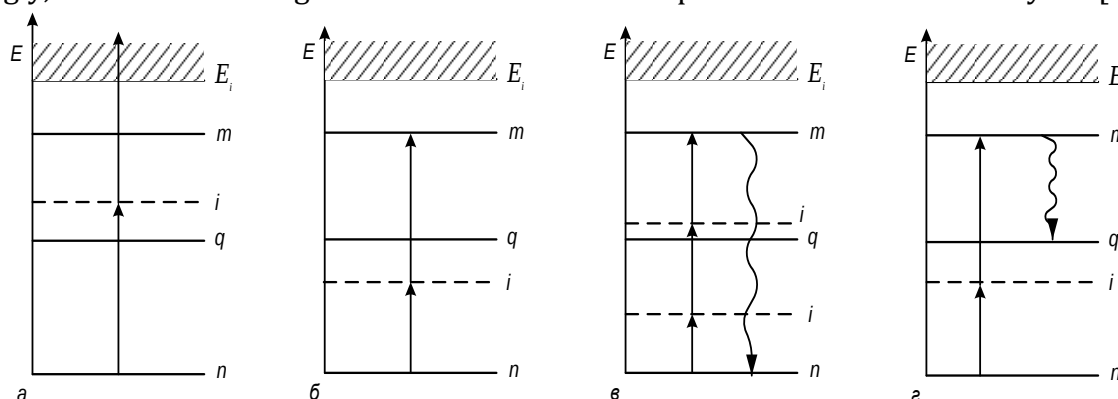


Figure 2. Schemes of multiphoton processes. a - multiphoton photoionization of an atom, b - multiphoton excitation of an atom, c - excitation of the highest (third) harmonic of the incident radiation, d - hyper-Raman scattering of light by an atom. The designations are the same as in Fig. 1 I is the state of an electron that has absorbed one or more photons.

Using laser radiation, multiphoton analogs of other basic single-photon processes were also discovered - multiphoton excitation of an atom,

excitation of higher harmonics during light scattering (multiphoton Rayleigh scattering of light) and hyper Raman (multiphoton Raman) scattering of light by an atom.

Thus, the use of high-intensity laser radiation has led to the emergence of a new chapter in physics - the nonlinear (multiphoton) interaction of electromagnetic radiation with matter at the atomic level.

The discovery of multiphoton (nonlinear) processes led to the modern



view of single-photon processes as a result of the realization of the limiting case when the interaction occurs at low light intensity [2].

During the second half of the 20th century, the processes of multiphoton (nonlinear) ionization of atoms were studied in detail experimentally and comprehensively described theoretically. To date, this chapter of physics is a study completed in its main features. Hundreds of works, dozens of reviews and a number of monographs are devoted to this issue.

Since laser radiation has unique properties (frequency and monochromaticity, power, coherence, and small angular divergence), there is a need to elucidate the features of its interaction with atoms. Let us now proceed to a description of some of the effects arising in the interaction of laser radiation with atoms.

The ionization of a substance under the action of light is called photoionization.

Basic laws of the photoelectric effect

1. The number of electrons N knocked out of a substance under the action of light is proportional to the intensity of the light flux I :

2. Photoelectrons are not formed if the radiation wavelength is greater than a certain critical value (the red border of the photoelectric effect), which is characteristic of each specific substance.

The presence of the red border of the photoelectric effect means that the substance is characterized by a certain minimum energy (ionization potential) that must be expended in order to pull out one electron from the substance. The energy of each photon is determined by its wavelength using the formula $E = \frac{hc}{\lambda}$, where c is

the speed of light. This shows that if the wavelength is too long, then the photon energy may not be enough to knock out an electron [2].

From the proportionality of the number of photoelectrons to the intensity of the light flux, it follows that photons "give birth" to electrons independently of each other.

The ionization potentials of different substances vary greatly. From several tens to several units. Therefore, it would seem that optical radiation cannot lead to ionization of atoms.

However, such a conclusion follows from the classical laws of the photoelectric effect. If the optical radiation is strong enough, then ionization can occur due to the simultaneous absorption of several photons. In other words, a high power of light cancels the law of the presence of a red border of the photoelectric effect: ionization can occur under the action of radiation with a large wavelength, if the power of this radiation is large enough. This phenomenon is called multiphoton ionization [2].

Since, in multiphoton ionization, several quanta are required to knock out one electron, the photoflux ceases to depend linearly on the light intensity. Thus, the second law of the classical photoelectric effect is also canceled.

At the beginning of studies of multiphoton ionization, it was believed that the dependence of the photocurrent on the intensity should be a power law. According to quantum mechanics, electrons in atoms can only be in states with certain well-defined values of energy. Therefore, after absorbing the first photon, whose energy is insufficient for ionization, the atom cannot



wait for the second photon to fly up to it, since the energy of the waiting state is forbidden by quantum mechanics. Nevertheless, by chance (and due to the complexity of atomic spectra, such cases are quite probable) it may turn out that after the absorption of a photon, the energy of an atom will approach the allowed energy state [1].

And then it should be taken into account that the energy position of this state itself depends on the intensity of laser radiation, since the intensity is high. There is a phenomenon called the dynamic Stark effect, which consists in changing the atomic spectrum by the laser field. As a result, the positions of the atomic levels begin to change with a change in the laser intensity.

Depending on the frequency dependence of the nonlinear photocurrent, the multiphoton excitation manifests itself in the form of a resonance. Therefore, multiphoton ionization with intermediate excitation of real atomic states is called resonant, while ionization with no intermediate resonances is called direct [2].

Structure of liquids

Prior to the use of X-ray analysis, the theory of the liquid state of substances was based on the concept that follows from the van der Waals equation, according to which a certain gradual transition from a gaseous state to a liquid state was established. Under strong compression, the intermolecular cohesive forces between gas particles become so significant that the substance itself retains its volume, regardless of external pressure. There is a change in the state of aggregation and a liquid is formed, which, according to these

ideas, can be considered as a highly compressed gas.

However, X-ray analysis showed that the condensed gas particles form small groups with an ordered structure. This did not follow directly from the concept of compressed gas.

If the electrons of individual atoms had a relatively weak connection with the latter, then when approaching distances comparable to the size of the electron orbits, "socialization" of these electrons should occur. This state will be typical for metals. In the case of a strong connection of electrons with individual atoms, this kind of approach will not cause the "socialization" of electrons, in which the connection with their atoms will be preserved to some extent. The substance will then be a dielectric. Therefore, the latter must consist of individual atoms whose force fields hold their electrons. When absorbing energy quanta, for example, during irradiation, electrons can leave the scope of their atoms and form a conduction current [3].

With this kind of irradiation, it may turn out that the absorbed energy quantum will not be enough to completely detach the electron from its atom. The electron will enter an excited state, i.e. will revolve around its atom in a larger orbit. When atoms collide, the excited state can be transferred to other atoms, i.e. excitons will form, but conduction will not occur. Such a phenomenon is observed in experience and is easily explained from the point of view of the classical concept, which consists in the idea of a dielectric as a compressed gas. It is difficult to explain this phenomenon from the zone point of view [3].



At present, it is generally accepted that a liquid at temperatures close to those at which crystallization occurs has many features in common with crystals than with gases, and at temperatures or pressures close to "critical", a liquid is more like a gas. Thus, the liquid state is intermediate. Features and differences appear especially clearly in the nature of thermal motions. In gases, molecules move rapidly and randomly, and the interaction of particles occurs mainly only during collisions, which impart certain characteristic features to gases (diffusion, thermal conductivity and viscosity).

In solids, atoms perform thermal vibrations for a long time in the same environment, but this environment is not constant: atoms move from one equilibrium position to another (sites and interstices), and thus, although slowly, but also as in gases, there is a continuous mixing of atoms. In this regard, there are already some features of similarity between a gas and a solid body [4].

For the movement of particles in a liquid, there is much more room than in a solid, because, for example. When melting crystals, their volume increases by 3-10%. However, particles of liquids, as well as particles of a crystalline body, oscillate around a temporary equilibrium position. With sufficient energy, a liquid particle leaves this position and passes into a new environment. Such transitions happen very often, and in this liquids differ significantly from solids. During transitions, due to thermal motion, microcavities can spontaneously form in liquids due to the expansion of particles to the sides (cavitation processes). These cavities, as can be assumed, play a certain role in the

scatter in determining the values of breakdown voltages, which is usually attributed to the influence of impurities and some random factors.

The duration of oscillations of liquid particles around one equilibrium position depends on temperature. With an increase in the latter, this number of oscillations decreases.

When studying the regularities of the scattering of X-rays by liquids, certain maxima of the scattered radiation were found, although diffused. Based on this, one could assume the presence of some order in the structure of liquid bodies [3].

Thus, the existence of microvolumes with an ordered structure in liquids can be considered established. In this respect, a liquid also has a certain resemblance to a solid. It turns out that against the background of the general disorder, liquids still have a certain order in their arrangement at small distances (short-range order).

X-ray analysis, however, does not make it possible to determine the nature of such quasicrystallite groups to the same extent as it can be done for crystals. At present, two assumptions can be made about the nature of these transformations.

According to the first of them, in microregions with sizes of 10-20 Å there is a certain orderly structure of scattering centers, very closely resembling a crystalline structure. Based on this idea, a liquid can be considered as consisting of a very large number of small crystals (crystallites) separated by amorphous interlayers [3].

According to the second proposal, the molecular ordering of liquids corresponds to the so-called sybotactic



state. At a certain point in time, a liquid can also be represented as consisting of small ordered groups. But the molecules in these sybotactic groups are not firmly fixed, but are constantly shifting. And the groups themselves do not exist for a long time, but break up and are created again. This is how sybotactic groups differ from solid crystallites. When the temperature changes, the structure of the sybotactic groups can also change. As the crystallization point is approached, due to the action of forces that determine the crystalline structure, the structure of these groups can approach the crystalline one. This is also confirmed by X-ray data. The intensity curves of scattered rays in liquids at a temperature close to the crystallization point are made similar to the same curves for the solid crystalline state. Apparently, the average arrangement of scattering centers in liquids is then the same as in a crystal.

It follows from the data presented that the breakdown strength of liquids depends on their structure and that it is still impossible to predict in advance the nature of the change in E during the transition of substances from a gaseous state to a liquid one. The basic electrical properties of liquids seem to be determined by the "short range order", i.e. the nature of the interaction of molecules with nearest neighbors, as is the case with semiconductors [3].

Breakdown of liquids under the action of laser radiation

If a sufficiently high voltage is applied to metal electrodes separated by a

liquid, extremely rapid ionization occurs in the liquid, as a result of which the liquid turns into gas a, then into plasma, acquiring electrical conductivity. This phenomenon is called electrical breakdown of the liquid. As a rule, the breakdown can be observed with the naked eye, it is accompanied by a light flash, sometimes very bright, and the evaporation of the liquid. Breakdown is the result of avalanche ionization, which starts from a small number of random seed electrons [4,5].

Electrons, accelerated by an electric field, acquire energy sufficient to detach an electron from a molecule or atom, and produce ionization, giving the acquired energy to this. From each energetic electron, two slow electrons are obtained, they, in turn, acquire energy from the field, ionize atoms, it turns out four, and so on. This is how an electron avalanche develops, the liquid is ionized to one degree or another, which depends on many factors, in particular, on what current the external circuit can pass. Ionization processes are always accompanied by acts of excitation of atoms, which are highlighted and give a visible flash [6].

The main processes of electrical breakdown of a liquid in the initial stage are multiphoton ionization, cascade, or avalanche ionization. The first electrons appear due to a frequency-dependent tunneling effect, at high frequencies the tunneling mechanism is equivalent to multiphoton ionization [5].



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CREATION OF CONDUCTIVITY IN DIELECTRIC LIQUIDS

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dielectric liquid,
breakdown parameter,
laser radiation

ABSTRACT

In this article, a study was made of the possibility of creating and using a stable conducting channel in a dielectric liquid under the influence of laser radiation

The paper shows the dependence of the type of breakdown on the radiation power density and frequency. The calculation of the main parameters of the breakdown, such as the breakdown temperature, the calculation of the values of the intensity and intensity of the radiation, the dimensions of the focusing region of the laser radiation to achieve the goal of the work, was carried out.

Experimental setup

To carry out experimental studies, an experimental setup was created, consisting of an experimental cell with a

test sample and a laser technological setup LTU-200, which was not previously used for these purposes.

The created experimental setup included:

- 1) Experimental cell (EC);
- 2) Power supply;
- 3) LTU-200;
- 4) Measuring instruments that detect the presence of a breakdown (voltmeter, ammeter, oscilloscope).

The layout of the installation and the methodology for conducting the experiment are shown in Fig. 1 and are as follows:

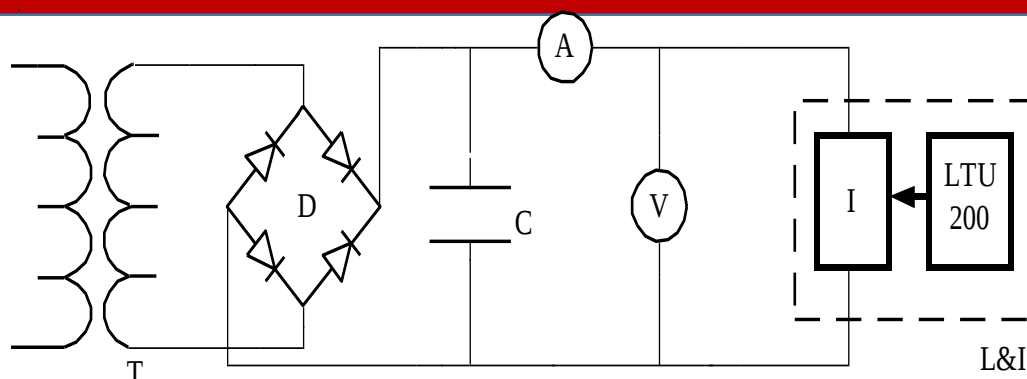


Figure 1. Scheme of the installation, where L&I is a radiation source and an experimental cell with a test sample (liquids), where T is an alternating voltage source, D is a diode bridge, C is a capacitor, A is an ammeter, V is a voltmeter, L&I is an experimental cell with test sample and laser processing unit LTU-200

To increase the efficiency of generating radiation from carbon dioxide molecules, most CO₂ lasers use a gas mixture with different percentages of carbon dioxide CO₂, nitrogen N₂ and helium He. The addition of nitrogen to the working gas mixture enhances the generation of laser radiation, and helium mainly intensifies the removal of heat during generation due to the high heat capacity and thermal conductivity, thereby lowering the overall temperature of the mixture.

In CO₂ lasers, the most common scheme is with an independent electric discharge, which combines the functions of pumping the working mixture and ionization. Such types of lasers are structurally designed in the simplest way, and in most well-known domestic and foreign lasers with a radiation power of up to 1000 W, an electric-discharge laser with a self-sustained discharge is used [1,2,3].

In modern designs of CO₂ lasers, in order to increase the efficiency of using the working mixture, it is necessary to maintain its temperature at an optimal level and prevent overheating. For this purpose, cooling is carried out either

according to the principle of heat removal from the discharge tube (CO₂ - lasers with diffusion cooling of the working mixture) [1], or by direct circulation of the working mixture in order to replace the heated volumes (lasers with convective cooling) [2].

The laser has the following specifications:

- wavelength 10.6 μm ;
- range of radiation power change from 5 to 100 W;
- LI divergence 0.002 rad;
- output beam aperture 12 mm;
- mode composition of TEM₁₀ radiation;
- supply voltage 27 ± 1.5 V;
- maximum power consumption 2.7 kW;
- frequency of driving pulses 10 kHz;
- radiation quantum energy – $h\nu=0.117$ eV.

Selecting the type of liquid to be tested

The choice of the type of the studied liquid was due to a number of features in accordance with the goal and task of the work. We list the main requirements:

1. Use in traditional methods of electroerosive processing of materials.
2. The possibility of using the investigated liquid in our setup.
3. Small ionization potential.



Methodology of experimental studies

The main purpose of the experiments was to study the effect of laser radiation on the electrical conductivity of dielectric liquids and to study the practical possibility of realizing electroerosive phenomena in a dielectric medium. Experiments are carried out to study the influence of the following parameters:

- Distance between electrodes;
- voltage drop on the electrodes;
- Power of laser radiation

The experiment itself consisted of two main parts and consisted of the following:

1. The experimental cell was filled with the liquid under study (bidistilled water,

alcohol, transformer oil), then a voltage from 0 V to 150 V was applied, and we fixed the breakdown voltage for this type of liquid, at which erosion begins.

2. The experimental cell was filled with the liquid under study (bidistilled water, alcohol, transformer oil), then a voltage from 0 V to 150 V was applied, and a laser beam of different power from 10 W to 100 W was focused in the zone between the two electrodes.

3. After the experimental part of the work, data processing and plotting of the current-voltage dependence are carried out.

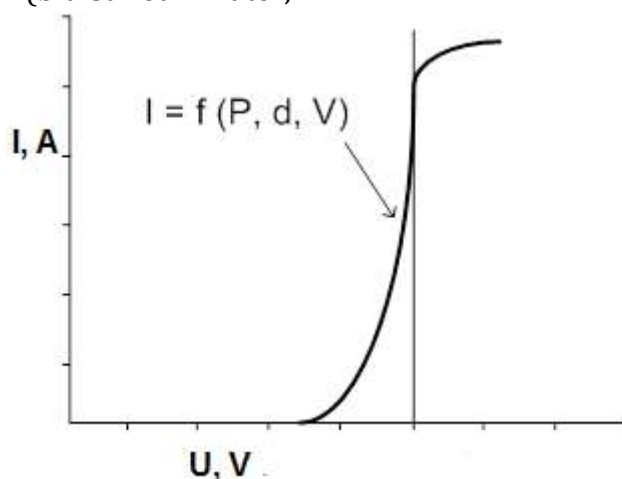


Figure 2. Graph of the volt-ampere dependence of the studied substance as a function of the parameters

It should be noted the experimental difficulties in the study of laser breakdown, which make it difficult to obtain reproducible thresholds, are as follows:

1. Irreproducibility of the temporal and spatial structure of a laser pulse due to the multimode nature of high-power pulses. This problem can be solved by careful transverse and longitudinal mode selection.
2. Influence of absorbing inclusions (impurities). During linear absorption in an

intense laser field, the energy is deposited so rapidly that the temperature of the absorbing inclusion can rise by thousands of degrees and cause local melting and evaporation of the substance. Thermal stress can cause the destruction of the material in which the inclusion is located. The problems of thermal conductivity and mechanical stress can be solved by classical methods. Of course, much depends on the dimensions of the absorbing inclusion, on the duration of the laser pulse, and on the



optical thickness of the inclusion. In practice, the fracture threshold is often determined by submicroscopic absorbing particles; for example, neodymium glass laser rods always contain particles of platinum. Such inclusions can be removed. The threshold determined by them, of course, is not connected with the fundamental properties of the substance, and in an ideally pure substance the threshold should be much higher. In experiments on laser breakdown, it is important to be able to either remove these inclusions or distinguish their effect from absorption effects in truly transparent materials.

3. In ideally transparent materials, the destruction threshold is often determined by the phenomenon of self-focusing. An example is the well-known characteristic thread-like traces of destruction in optical glasses. Although electrical breakdown and avalanche ionization can occur in the self-

focusing region, the threshold observed in such cases is determined by the critical power of self-focusing rather than the threshold electrical breakdown power density. In quantitative studies of breakdown, it is necessary to avoid not only self-focusing, but also the slightest deformation of the laser beam due to a change in the refractive index, which depends on the radiation intensity.

conclusions

- Experiments were carried out to study the effect of laser radiation on the electrical conductivity of dielectric liquids.
- The type of investigated dielectric liquids, which will be used in the experiment, has been determined.
- The main criterion for choosing the type of liquid was the use in traditional methods of electroerosive processing of materials, the possibility of using the investigated liquid in the installation.

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ASSESSMENT OF THE EFFECTIVENESS OF CLINICAL AND MYCOLOGICAL TREATMENT OF PATIENTS WITH UROGENITAL CANDIDIASIS

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treatment, clinical and
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fluconazole.

ABSTRACT

The goal is to determine the clinical and myocordial efficacy of urogenital candidiasis in the treatment of patients with genital warts. It has been found that the main causes of urogenital candidiasis include endocrinopathies, antibiotics and cytostatics, and hypovitaminosis. Special clinical symptoms of urogenital candidiasis, clinical and mycological sampling of fluconazole are more common in men than in women.

Candida yeast-like fungi are found in 30-50% of healthy individuals in cultures of sputum, feces, urine, scrapings from human mucous membranes. In human oral mucosa, its content is 46-52%, and in the vaginal mucosa of non-pregnant women, the excretion rate reaches 11-13%, increasing during pregnancy from 29% to 86%. In human feces, the frequency of isolation of these fungi reaches up to 80%, and on intact skin up to 9%. [7, 9].

Transformation of fungi from nonpathogenic microorganisms to aggressive pathogens, as well as infection from the outside occurs as a result of a decrease in the immune system of the body [1, 3, 5].

Candida spp has the peculiarity to influence the occurrence and course of infectious diseases caused by other

pathogenic and/or opportunistic microorganisms. This effect is characterized by the effect on the patient's body and the pathogen [10].

Candidiasis infection is not transmitted from person to person, but the occurrence of this infection has serious medical and economic consequences. Candidiasis is characterized by a multifocal and chronic recurrent course [2, 8].

Purpose of research. To determine the clinical and mycological efficacy of urogenital candidiasis treatment in dynamics depending on the gender and place of residence of patients.

Materials and methods of research. A total of 81 female and 15 male patients (control group) with urogenital candidiasis (UC) aged 18-55 years were examined. The age distribution of those examined gave the



following results: 18-21 years, $2.1 \pm 1.4\%$ ($n=2$), 22-30 years, $49.0 \pm 5.1\%$ ($n=47$), 31-40 years, $36.4 \pm 4.9\%$ ($n=35$), 41-50 years, $8.3 \pm 2.8\%$ ($n=8$) and 50-60 years, $4.2 \pm 2.0\%$ ($n=4$). The main group of patients was 22-30 and 31-40 years old.

Patients mainly lived permanently in Tashkent ($n=46$) and Khorezm regions ($n=50$). Most of the patients in Tashkent province were rural residents ($73.9 \pm 6.5\%$, $n=34$), in Khorezm province the figure was slightly lower - $22.0 \pm 5.9\%$ ($n=11$).

Distribution of patients by social status yielded the following results: workers and farm workers $52.1 \pm 5.1\%$ ($n=50$), housewives $36.4 \pm 4.9\%$ ($n=35$), students and female students $2.1 \pm 1.4\%$ ($n=2$), and temporarily unemployed $9.4 \pm 3.0\%$ ($n=9$). There were no employees or persons with higher education among the patients.

All ethical principles related to the recruitment of patients for medical research are based on the Declaration of Helsinki of the World Medical Association (Helsinki, 1964, last supplement, Seoul, 2008).

To verify the diagnosis of UC (for women, vaginal candidiasis), we used clinical examination methods generally accepted in dermatology [2, 6].

Identification of *Candida* spp was carried out in three stages: taking biological material from patients; microscopic examination; mycological examination - isolation of pure cultures and identification to species [7].

To determine the clinical and mycological efficacy of treatment, all patients were divided into 3 groups: Group 1 - female UC patients who received conventional treatment (OL) and the drug

fluconazole (flunol) - 66 patients; Group 2 - female UC patients who received only OL - 15 patients; Group 3 - male UC patients who received OL and the drug fluconazole (flunol) - 15 patients (control group).

Fluconazole (flunol) is an antifungal agent produced by Nobel Pharmsanoat (Uzbekistan). The drug belongs to the group of triazole derivatives. The mechanism of action is due to the highly selective inhibition of the synthesis of cytochrome P450-dependent fungal enzymes, which leads to a decrease in cellular styrene synthesis and disruption of cell wall permeability. When administered orally it is well absorbed from the gastrointestinal tract (up to 90%). Plasma concentrations reach a maximum of 0.5-1.5 hours after intake, with a plasma elimination half-life of about 30 hours. It is eliminated mainly by the kidneys (about 80%). Dose of 150 mg once for 7 days.

Statistical processing of the obtained results was performed using traditional methods of variation statistics with the application package Excel in a personal computer based on the processor "Pentium-IV". The principles of evidence-based medicine were used in organizing and conducting the research.

Research results and discussion.

Given the unambiguous place of various factors in the formation and development of UC in patients, we have studied the detectability of different causes of morbidity in a comparative aspect in the regions studied.

We found that the main causes of UC formation in the examined patients were: endocrinopathies, hypovitaminosis, long-term intake of cytostatics, long-term intake of antibiotics, and other reasons.



In Tashkent province, unlike residents of Khorezm province, endocrinopathies in women were detected significantly more ($69.3 \pm 7.4\%$ vs. $54.8 \pm 7.7\%$). No differences were found in other reasons for the formation of the studied nosological unit.

There were cross-gender differences in the main causes of UC. While in women the leading causes were endocrinopathies, in men the first place was such an indication as "long-term use of antibiotics. No significant differences were observed for other causes of UC ($P > 0.05$).

The next sign that characterizes the course and prognosis of the pathological condition is the age of the disease. It is known that the success of treatment depends on this parameter; the sooner patients are referred for specialized treatment, the sooner the symptoms of the disease can be controlled.

In this regard, we studied the parameters of the timing of primary treatment of UC patients, depending on the place of residence during the examination and questioning of patients (Table 1).

Table 1

Comparative parameters of the time of primary treatment of patients with urogenital candidiasis depending on the place of residence

Days	Khorezm region, n=50		Tashkent region, n=46	
	abs	%	abs	%
4 days	13	$26,0 \pm 6,2$	14	$30,4 \pm 6,8$
5 days	14	$28,0 \pm 6,3$	14	$30,4 \pm 6,8$
6 days	13	$26,0 \pm 6,2$	5	$10,9 \pm 4,6$
7 days	4	$8,0 \pm 3,8$	6	$13,1 \pm 5,0$
8 days or more	6	$12,0 \pm 4,6$	7	$15,2 \pm 5,3$

The data obtained show that sick residents of Tashkent region applied mainly on the 4th day and 5th day ($30.4 \pm 6.8\%$ each) of the disease. The same figures for Khorezm region were $26.0 \pm 6.2\%$ and $28.0 \pm 6.3\%$, respectively, indicating no statistically significant difference between the indicators ($P > 0.05$). There were no intersex differences in this trait.

Thus, intersex differences were found in indicators of the main causes of UC for endocrinopathies and prolonged antibiotic use, but no significant differences were

found by place of residence. There were also no differences by place of residence in terms of the primary referral of patients for specialized medical care.

The next stage of our research was to study the detection rates of the main clinical symptoms in this population. It was found that there was virtually no difference in these parameters by place of residence.

There were intersex differences in the detection of clinical symptoms in patients. Six main clinical symptoms were detected in female UC patients (Table 2).



Table 2
**Rates of detection of major clinical symptoms in women with urogenital candidiasis,
n=81**

Symptoms	abs	%
Burning and itching that increases in the evening, in case of hypothermia, in case of untimely hygiene, before or after menstruation	80	98,8±1,1
Reddening and swelling of the mucous membranes of the genitals	79	97,5±1,7
Abundant or scanty white discharge of curd-like consistency	77	95,1±2,4
Sour odor from vaginal discharge	77	95,1±2,4
Pain and burning when urinating	75	92,6±2,9
Discomfort during sexual intercourse	61	75,3±4,8

The results show that the most frequently revealed clinical symptoms in female patients were burning and itching, which intensified in the evening, during hypothermia, untimely hygiene, before or after menstruation (98.8±1.1%, n=80), redness and swelling of the genital mucosa (97.5±1.7%, n=79). The following clinical symptoms followed: copious white

discharge of curd-like consistency (95.1±2.4%, n=77), presence of an acidic odor from vaginal discharge (95.1±2.4%, n=77), pain and burning during urination (92.6±2.9%, n=75), and discomfort during sexual intercourse (75.3±4.8%, n=61). Male patients were found to have disease-specific clinical symptoms (Table 3).



Table 3
Parameters of detectability of basic clinical symptoms in men with urogenital candidiasis, n=15

Symptoms	abs	%
Redness and itching in the area of the penis head	14	93,3±6,5
Soreness in the area of the penis head	13	86,7±8,8
White, curd-like buildup on the penis head	12	80,0±10,3
Pain when urinating	12	80,0±10,3
Pain and discomfort during sexual intercourse	11	73,3±11,4
Swelling of the penis head	10	66,7±12,2

In male patients, redness and itching in the area of the penile head were detected most frequently (93.3±6.5%, n=14). The following symptoms were the next most frequently detected: Pain in the penile head area (86.7±8.8%, n=13), white, curd-like plaque on the penile head (80.0±10.3%, n=12); pain during urination (80.0±10.3%, n=12); pain and discomfort during intercourse (73.3±11.4%, n=11) swelling of the penile head (66.7±12.2%, n=10).

Thus, it was found that the main clinical symptoms of UC in women were burning and itching of the genitals, redness, swelling of the mucous membranes, copious or scanty white discharge of curd-like consistency and sour odor, pain when urinating and discomfort during sexual intercourse. Men had similar symptoms - redness, itching, soreness, swelling and white curd in the area of the penile head, pain during urination and intercourse. Attracting attention is the fact that the

intensity of detection of clinical symptoms of UC was significantly higher in women than in men.

The next stage was to study the clinical and mycological efficacy of treatment methods in UC patients in a comparative aspect.

In Group 1 patients parameters of clinical symptom relief were reliable ($P<0.001$), the reduction was up to 1.5-3.0%, and some clinical manifestations, such as copious, white discharge of cystic consistency, pain and burning during urination, discomfort during sexual intercourse disappeared in all patients.

In patients of the 2nd group, although there was a reliable decrease in the definition of clinical symptoms ($P<0.001$), but the intensity of symptom relief was not as characteristic as in the 1st group of female patients ($P<0.05$). Thus, redness and swelling of the genital mucous membranes decreased from 93.9±6.2%



(n=62) to $13.3 \pm 8.8\%$ (n=2), burning and itching from 100.0% (n=15) to $13.3 \pm 8.8\%$ (n=2), profuse white discharge of curd-like consistency from $86.7 \pm 8.8\%$ (n=13) to $6.7 \pm 6.4\%$ (n=1), sour odor from discharge from $86.7 \pm 8.8\%$ (n=13) to $26.7 \pm 11.4\%$ (n=4). In addition, the post-treatment isolation rate of *Candida* spp. in Group 1 patients was 0%, while in Group 2 patients it was $13.3 \pm 8.8\%$ ($P < 0.05$), which proves

the mycological efficacy of fluconazole (Group 1) along with its clinical effectiveness in female UC patients.

In the control group of patients (men who were treated with fluconazole), the clinical and mycological efficacy of treatment was as high (Table 4) as in the group 1 women, but the intensity of clinical symptom definition was significantly reduced ($P < 0.05$).

Table 4

Clinical symptom manifestation in men with urogenital candidiasis (group 1) before and after treatment

Symptoms	Mens, % (n=15)	
	Before treatment	After treatment
Redness and itching in the area of the penis head	$93,9 \pm 6,2$	$6,7 \pm 6,4^*$
Soreness in the area of the penis head	$86,7 \pm 8,8$	$6,7 \pm 6,4^*$
Swelling of the penis head	$66,7 \pm 12,2$	0
White curd on the glans of the penis	$80,0 \pm 10,3$	0
Pain when urinating	$80,0 \pm 10,3$	$13,3 \pm 8,8^*$
Pain during sexual intercourse	$73,3 \pm 11,4$	$6,7 \pm 6,4^*$
Seedability <i>Candida</i> spp	100,0	$13,3 \pm 8,8^*$

Note: * - sign of reliability before and after UC treatment.

This fact indicates that fluconazole included in the OC course has the most effective effect on female patients than on male patients, regardless of place of residence. In addition, it should be emphasized that full mycological efficacy is not achieved, since in patients in Group 2 (13.3%) *Candida* spp. continued to be excreted after a course of treatment.

Thus, there was a significant decrease in the detection of clinical symptoms of UC in both comparison groups in women and in the control group, but in the group of female patients whose OI course included fluconazole, the relief of symptoms was more intense than in the comparison groups. Similar results were obtained with regard to the isolation rate

of *Candida* spp. from biological material obtained from these patients. These facts indicate high clinical and mycological efficacy of fluconazole. In addition, the clinical and mycological efficacy of this drug was found to be significantly greater in women than in men, regardless of their place of residence.

Conclusions. 1. The main causes of onset and development of UC were endocrinopathies, prolonged intake of antibiotics and cytostatics, hypovitaminosis, with the first 2 causes being the most frequent. There were some intersex differences in endocrinopathies and prolonged antibiotic intake, but no differences by place of residence of the patients were found.

2. It has been found that the main specific clinical symptoms of UC are more



often detected in women than in men, regardless of age and place of residence.

3. There was a significant decrease in the detection of clinical symptoms of UC in the group of female patients whose OL course included fluconazole. In this group of patients, the relief of symptoms was more intense than in the compared groups.

Similar results were obtained for *Candida* spp.

4. High clinical and mycological efficacy of fluconazole was revealed. The clinical and mycological efficacy of this drug was significantly higher in women than in men regardless of their place of residence.

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TURLI DARAXTLARNING CHANG USHLASH QOBILIYATI

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MAQOLA TARIXI

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KALIT SO'ZLAR

*Chang, tarozi, Ulmus,
Populus, kislorod,
fotosintez,*

ANNOTATSIYA

Shahar ko'chasi bo'ylab ekilgan daraxtlar aholini quyosh va shovqindan va shahar havosini ifloslantiruvchi mayda zarralardan to'sadi va o'ziga yutadi. Ushbu tezisda turli xildagi daraxtlarning chang ushlash qobiliyati haqida ma'lumot berilgan.

Kirish: Yashil joylar shahar havosini changdan tozalaydi, chunki daraxtlar va butalarning barglari yaxshi chang akkumulyatoridir. Ifloslangan havo oqimi o'z yo'lida yashil massaga duch kelganida, u sekinlashadi, buning natijasida tortishish kuchi ta'sirida havo tarkibidagi changning 60-70% havo oqimi bilan aloqada bo'ladi. tanasi, shoxlari, barglari va barglar yuzasiga joylashadi, ignalar. , shoxlari, tanasi. Yomg'ir yog'sa, chang yerga yuviladi. Yashil bo'shliqlar ostida, harorat farqi tufayli, changni erga olib keladigan tushuvchi havo oqimlari paydo bo'ladi. Havodagi chang miqdori havo namligi va shamol tezligiga qarab o'zgaradi.

Changning tarqalishi yoki harakatlanishi, shuningdek, turli joylardan shamol tomonidan distillangan changning oldinga siljishini kechiktiradigan butalar tomonidan oldini oladi. Ochiq zamin havodagi chang manbai hisoblanadi,

shuning uchun shaharlarda changni kamaytirish uchun yo'laklar va turar-joy binolari bo'ylab maysazorlar o'rnatiladi.

Turli xil turdagi daraxtlarning chang o'tkazmaydigan xususiyatlarining samaradorligi bir xil emas va daraxtning tuzilishiga, shamolga chidamliligiga bog'liq. Shunday qilib, eng nozik villi bilan qoplangan qarag'ayning qo'pol barglari va nilufar barglari, qush gilosi, oqsoqollar zarang, kul, boshqning silliq barglaridan ko'ra changni yaxshiroq ushlab turadi. Daraxtlar ostidagi havoning chang miqdori ochiq maydonga qaraganda kamroq. Maydoni 1 gektar bo'lgan shahar bog'lari va maydonlarining o'simliklari vegetatsiya davrida 10-20 million m³ havoni changdan tozalaydi. Havodagi chang miqdorining miqdoriy ko'rsatkichlari yashil maydonlar maydoniga va ekish zichligiga bog'liq. Zich o'simliklari bo'lgan katta park havosida siyrak ekinlari bo'lgan xuddi shunday katta



park havosiga qaraganda kamroq chang bor.

O'simliklarning changga chidamli xususiyatlarini bilib, ularni to'g'ri joylashtirish, turlarni tanlash, ekish zichligi

nafas oladigan ov-havoning turli xildagi changlar bilan ifloslanishi ortib bormoqda. Shahar va qishloqlardagi havoni changlar va gazlardan tozalovchi asosiy vosita bu – daraxtlardir. Ularning barg va novdalari

Nº	Daraxtnomi	Bargsoni	O'rtachachangmiqdori, gr.
1	Ulm.1.N	5	0.88167
2	Pop.1.N	5	0,94134
3	Mac.1.N	5	0,13034
4	Thuj.1.N	5	0,038
5	Biota.1.N	5	0,108034
6	Soph.1.N	5	0,01534
7	Frax.1.N	5	0,11734

bilan eng katta changga chidamli ta'sirga erishish mumkin. Sanoat korxonalarida changni chiqarish joylarida maksimal darajada ushlab turish, ko'cha va maydonlarning obodonlashtirish (asfaltlash) darajasini yaxshilash va ko'cha va maydonlarning ish sharoitlarini yaxshilash (o'z vaqtida) kabi chora-tadbirlar havodagi chang miqdorini sezilarli darajada kamaytirishi mumkin. sug'orish va tozalash). Ushbu chora-tadbirlarning zarurati yoz mavsumida daraxtlar va butalarning barglariga to'plangan changning asta-sekin daraxt plantatsiyalarining nobud bo'lishiga olib kelishi bilan bog'liq.

Asosiy qism:

Hozirga kelib butun dunyodagi singari bizning mamlakatimizda ham, jumladan, Xorazm viloyati shahar va qishloqlarida ham havoni asosiy ifloslantiruvchi vositalardan hisoblanmish avtomobillar sonining keskin ortishi natijasida insonlar

havodagi dispers zarrachalarni ushlab havoni tozalashdagi hissasi 75% ga tengligi tadqiqotlarda aniqlangan. Daraxtlarning barglaridagi transpiratsiya jarayoni Ulmus uzbekistanica Drob. (Ulmus.1.N.), Populus alba L.(Pop.1.N.), Cydonia cantos L.(Cyl.1.N.), Thuja occidentalis L.(Thuj.1.N), Biota orientalis Endl. (Biota.1.N), Sophora japonica (Soph.1.N), Fraxinus viridis Machx (Fr.Vir.M.N), Maclura aurantiaca Nutt(Mac.1.N.).larda aniqlandi.

1- jadval

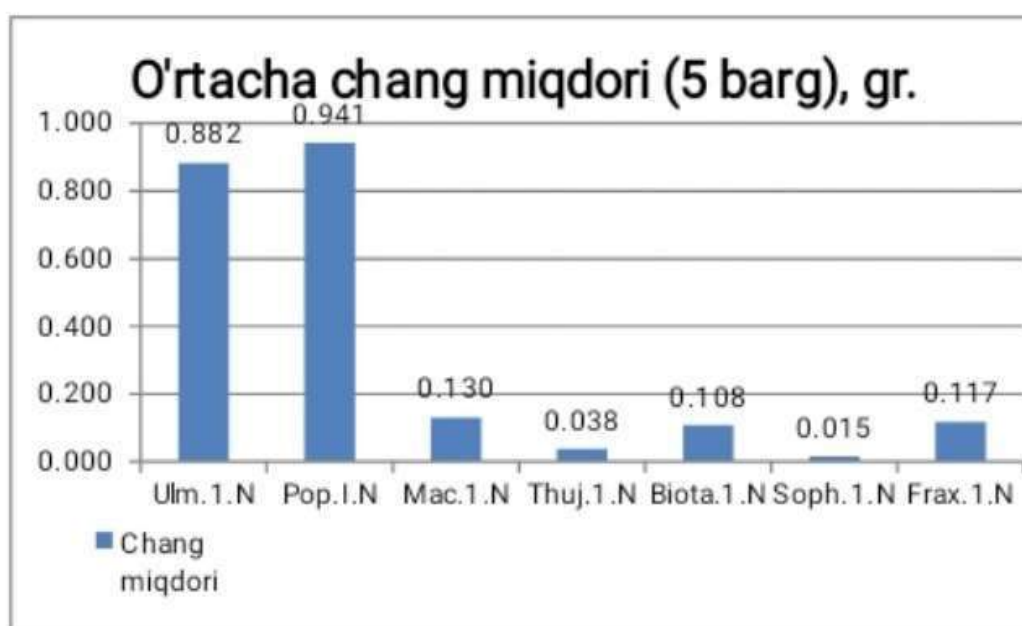
Daraxt barglarining chang ushlab qobiliyati bo'yicha tajriba olib borishda eng avval har bir daraxtdan 5 tadan bargdan olib uning dastlabki og'irligi o'lchandi.Shundan so'ng uning changidan tozalanib qayta tarozida o'lchandi.Ikkala barg og'irligi aniqlanib,ularning ayirmasi bizga olingan namunalardagi daraxt



barglarining chang miqdorini aniqlab beradi (1-jadval).

1-grafik

Xulosa: Olingan natijalardan shuni xulosa qilish mumkinki, daraxtlarning ko'kalamzorlashtirish qimmatli belgilari ularning birinchi navbatda kelib chiqishiga va sharoitga moslashish qobiliyatiga



Daraxt barglarining chang ushlash qobiliyati bo'yicha eng yuqori ko'rsatkich, Pop.1.N da ko'rsatildi va o'rtacha chang ushlash qobiliyati 0,94134 gr miqdorni tashkil etgani ma'lum bo'ldi.

Eng kam chang ushlash qobiliyati esa Soph.1.N da kuzatilib, undagi miqdor 0.01534 gr ni tashkil etdi. Umumiy o'rtacha miqdor esa 0,88167gr ni tashkil etdi (1-grafik).

bog'liq. Daraxt barglarining changlarni ushlash qobiliyati daraxt turiga, bargning shakli va kattaligiga, bargning tukliligiga, g'adir- budirligiga, ko'chadagi transport vositalarining harakatiga, sanoat korxonalarining joylashishiga bog'liq bo'lgan holda turlicha miqdorda bo'ladi.

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ҚАНДЛИ ДИАБЕТ БИЛАН ОҒРИГАН БЕМОРЛАРДА ФУРНЬЕ ГАНГРЕНАСИНИ КЕЧИШИ

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MAQOLA TARIXI

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ANNOTATSIYA

Ушбу мақолада қандли диабет билан оғриган беморларда Фурнье гангренасини кечиши ҳақида маълумот ва хулосалар берилган.

KALIT SO'ZLAR

перинеум, перианал
соҳа, стационар
шароит, йириггли
касалликлар, прогнози.

Кириш. Фурнье гангренасини кам учрайдиган касалликлардан бири бўлиб, бу касаллик тўлиқ ўрганилмаган хисобланиб, ҳозирги кунда қандли диабет билан оғриган беморларда Фурнье гангренасини кечишини аниқлаш борасида тадқиқотлар олиб борилмоқда. Бугунги кунда кўплаб мамлакатларда хусусан АҚШ да Миллий биотехнология ахборот маркази 400 га яқин Фурнье гангренаси ҳақидаги маълумотларни чоп этган.

Замонавий тушунчаларга кўра, Фурнье гангренаси тез ривожланаётган полимикробиял етиологиянинг некротизан фасиит шаклларида бири бўлиб, ташқи жинсий аъзолар, перинеум ва перианал минтақанинг бирламчи шикастланиши билан бирга келади. Бу шошилинич диагностика ва терапевтик чораларни талаб қиладиган ўткир жарроҳлик касаллиги ҳисобланади.

қандли диабет билан оғриган беморларда Фурнье гангренасининг прогнози биринчи навбатда тиббий ёрдам кўрсатиш вақти билан белгиланиб, бази ҳолатларда терапевтик тадбирларнинг бир неча соатга кечикиши септик шокнинг ривожланиши туфайли юқори ўлим (25% ёки ундан кўп) билан бирга келади. Фурнье гангренасида ёши, иқлимий ёки географик чекловлари йўқ бўлиб, бази давлатларда касалланиш йилига 900-1000 ҳолатни, асосан, ижтимоий фаол ёшдаги (50-55 ёш) еракларда учраши аниқланган.

Тадқиқотлардан мақсад:
Сурхондарё вилоятида 35 - 80 ёшгача бўлган қандли диабет билан оғриган беморларда Фурнье гангренасини кечишини таҳлил қилиш.

Муаммонинг долзарблиги:
Фурнье гангренаси қандли диабет билан



оғриган беморларда оғир кечиши билан бирга улар ортасида ўлим кўрсаткичи бирмунча юқори хисобланади. Соғлиқни сақлаш маълумотларига кўра кейинги 10 йилликда аҳоли орасида бу касаллик билан касалланиш 2.2 - 6.4 барабарга ошганлиги маълум қилинди. Тадқиқотчилар олиб бориган тадқиқотларида Фурнье гангрена билан асосан эркаклар касалланишини, бази ҳолатларда бу касаллик билан аёллар ҳам касалланганликларини аниқлашган. Фурнье гангрена қандли диабет билан оғриган беморларда касаллик асосан 35-80 ёшдаги одамларда учрайди. Бу касалликда даволаш самарадорлиги паст бўлиб, тиббий манбаларда ўлим кўрсаткичи (35-74%) ни ташкил этгани қайд қилинган. Фурнье гангрена билан оғриган беморлар шифохонада узоқ вақт даволанишларини талаб қилади. Шу сабабдан тадқиқотимизни қандли диабет билан оғриган беморларда Фурнье гангрена кечишини ўрганишга қаратдик.

Материал ва текширув усуллари: Кузатишлар олиб борилганда 2020-2021 йилларда 8 та бемор вилоят кўп тармоқли тиббиёт марказида стационар даволанишда бўлди. Уларнинг орасида эркаклар 7 (87.5%), 1(12.5%) аёллар.Шундан:20-40 ёшгача бўлган эркаклар 1(12.5%) ни, 40-70 ёшгача бўлган эркаклар 5 (62.5 %) ни, 20-40 ёшгача бўлган аёллар 1(12.5%) ни, 40-70 ёшгача аёллар 1 (12.5%) ни ташкил этди. Фурнье гангрена сини диагностика қилишда беморларнинг шикоят, анамнези, объектив кўрик натижаларидан фойдаланилди. Беморларда Фурнье гангрена

перианал, ташқи жинсий аъзолар, чов соҳалари тери, тери ости ёғ қавати ва фасцияларни некрозга учрагани аниқланди. Фурнье гангрена билан оғриган беморлар таҳлил қилинганда 5 (62.5%) та бемор қандли диабет билан оғриганлиги аниқланди. Шифохонага мурожаат қилиб стационар шароитда даволанган беморлардан 4 (50%) тасида ўлим ҳолати қайд этилди. Беморларни 4 (50%) таси тузалди. Қандли диабет билан оғриган беморларда Фурнье гангренада жароҳатда деструктив ўзгаришлар тез кечиши ва интоксикацияни кучли бўлганлиги аниқланди. Беморларда 7(87.5%) ҳолатда перианал соҳанинг йирингли касалликлари ва жароҳатлари натажасида Фурнье гангрена келиб чиққанлиги аниқланди.

Хулоса. Тиббий манбаларда бу касаллик қандли диабет,спиртли ичимлик истеъмол қилувчилар ва иммун системаси паст беморларда кўп учраши айтилган. Кузатишда Фурнье гангрена қандли диабет билан оғриган беморларда, 40-70 ёш оралиғида 6 (75 %) энг кўп учраши аниқланди. Хулоса қилиб шуни айтиш мумкин, касалликни эрта аниқлаш, актив хирургик тактика йиринг - некротик зонада радикал жарроҳлик амалиётини бажариш,метаболик бузилишларни вақтида даволаш касалликда ўлим кўрсаткичинини камайтиради.



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ДИАБЕТИК ТОВОН СИНДРОМИДА ГАНГРЕНАНИНГ КЎРИНИШЛАРИ

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KALIT SO'ZLAR

нам некроз,
консерватив чоралар,
оёқнинг ампутацияси,
микроангиопатия,
нейроишемик гангрена.

ANNOTATSIYA

Ушбу мақолада диабетик товон синдромида гангренанинг кўринишлари ҳақида фикир мулохазалар келтирилган.

Кириш. Диабетик товон гангрена - қандли диабетда тананинг маълус бир қисмининг ўлими хисобланади. Дистал пастки оёқлар одатда таъсирланади яъни зарарланади. Асосий симптомлари: оғриқ, оёқнинг қора (қора-кўк, тўқ бинафша) ранги, таъсирланган ҳудудда сезгирлик ва қон таъминоти йўқлиги. Нам некроз билан йиринглаш, кўнгил айнаши, титроқ, гипертермия кузатилади. Ташхис қўйишда ва ташқи текширув маълумотлари асосида амалга оширилади, тўқималар ва қон томирларининг ҳолатини баҳолаш учун МРИ, ултратовуш, рентгенография буюрилади ва неврологик текширув ўтказилади. Некрознинг тарқалиши ва турига қараб, консерватив чоралар, некрэктомия ёки оёқнинг ампутацияси амалга оширилади.

Диабетик товон синдроми гангренанинг оёқ синдромининг оғир шаклидир. Қандли диабет билан оғриган беморларнинг тахминан 35-40 фоизи ушбу патологияни ривожланиш хавфи остида бўлиб, эпидемиологик кўрсаткич 3,5-8,5% ни ташкил қилади. Тасдиқланган маълумотларга қараганда диабетик товон синдромида гангренанинг кўринишлари бор беморларнинг 8-12 фоизи оёқларини ампутация қилишни талаб қилади.

Тадқиқотлардан мақсад:
Диабетик товон синдромида гангренанинг кўринишларини таҳлил қилиш ва ўрганиш.

Муаммонинг долзарблиги:
Қандли диабет билан оғриган беморларда гангрена асорати кўп учрайди. Беморларда асосан гангрена



оёқ бармоқларидан бошланади. Беморларда макро, микроангиопатия, нейропатия ва иккиламчи инфекция натижасида гангрена кузатилади. Кейинги йилларда қандли диабет 2 типи билан оғриган беморлар сони тобора кўпайди. Бунга сабаб камҳаракатлик, семизлик, руҳий зўриқишлардир. Қандли диабет билан оғриган беморларда гангрена асорати кузатилганда, қўл ва оёқларда экзартикуляция ёки ампутация натижасида беморларни ногирон бўлиб қолиши ва операциядан кейин жароҳатларни узоқ вақтгача битмаслиги кузатилади.

Материал ва текширув усуллари: Кузатиш олиб борилганда 2020-2021 йилда 188 та бемор вилоят кўп тармоқли тиббиёт марказида стационар даволанишда бўлди. Уларнинг орасида эркаклар 102 (54.26%), 86(45.74%) аёллар. Шундан: 20-40 ёшгача бўлган эркаклар 21(11.17%) ни, 20-40 ёшгача бўлган аёллар 17 (9.04%) ни, 40-60 ёшгача бўлган эркаклар 64 (34.04%) ни, 40-60 ёшгача бўлган аёллар 53(28.19%) ни, 60 ёшдан юқори эркаклар 17 (9.04%) ни, 60 ёшдан юқори аёллар 16 (8.52 %) ни ташкил этди. Диабетик товуш синдромида гангренинг кўринишларини диагностика қилишда беморларнинг шикояти, анамнези, объектив кўрик, лаборатор, доплер текшируви натижаларидан

фойдаланилди. Беморлардан 28 (14.89 %) да ишемик типдаги гангрена, 113(60.11 %) да нейропатик типдаги гангрена, 47 (25 %) да нейроишемик типдаги гангрена учрагани аниқланди. Беморлар таҳлил қилинганда асосан оёқ панжаси бармоқларида майда жароҳатлардан сўнг гангрена кузатилганлиги аниқланди. Таҳлил натижасида асосан беморлар қандли диабет 2 типи билан оғриганлиги аниқланди.

Хулоса: Қандли диабет билан оғриган беморларда гангрена асорати макро, микроангиопатия, нейропатия ва қон ивиш системасидаги ўзгаришлар натижасида кўп учрайди. Таҳлил натижасида гангрена асорати асосан эркакларда 40-60 ёш оралиғида 64 (34.04%) ва 113(60.11 %) беморларда нейропатик типдаги гангрена учраши аниқланди.

Хулоса қилиб шуни айтиш мумкин, касалликни эрта аниқлаш, йирингли жароҳатларда радикал жарроҳлик амалиётини бажариш, метаболик бузилишларни вақтида даволаш беморларда гангрена асоратларини камайтиради.



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ИЗУЧЕНИЯ ВЛИЯНИЯ «ФИТОДИАБЕТОЛА» НА АРТЕРИАЛЬНОЕ ДАВЛЕНИЕ И ДЫХАНИЕ

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KALIT SO'ZLAR

трахея животного,
дыхательного
движения, раствором
гепарина, способности
миокарда, правого
глаза.

ANNOTATSIYA

*В данной статье приведены сведения об изучении
влияния «Фитодиабета» на артериальное давление и
дыхание.*

Целью работы. Научное обоснование влияния фитодиабета на артериальное давление и дыхание в зависимости от возраста и пола.

Результаты и их обсуждение. Влияния «Фитодиабета» на артериальное давление и дыхание изучаем в условиях острого опыта на 4 кошках и 2 кроликах массой 2,5-3,5 кг обоего пола. Опыт проводили под наркозом, которые вызвали уретаном. Уретан вводили внутривенной в дозе 1-1,2 г/кг. Артериальное давление регистрировалось на ленте электрокардиографа из общей сонной артерии через системы полиэтиленовых трубок ртутном манометром Людвига.

Система заполнялась 5% раствором лимоннокислого натрия, а в области артериальной канюли к раствору добавляли 0,015 мл раствором гепарина. Параллельно регистрировали дыхательного движения при помощи капсулы Маррея соединенной трахее животного. «Фитодиабетол» вводили равно при помощи специального зонда с оливой в дозе 5-10 мл/кг и 25 мл/кг было выявлено, что «Фитодиабетол» в дозе 5-10 мл/кг незначительно снижал артериального давления и угашал частоту дыхательных сокращений препаратов в дозе 25 мл/кг более выражено снижает кровяной давлением, которые продолжалось не более 23-35-



мин. Действие «Фитодиабетол» на артериальное давление было более выражено при высоком исходном давлении.

В следующей серии опытов изучали влияние «Фитодиабетол» на биоэлектрические активности сердца. Опыт переводили на двух кроликах и на 8 крысах, обоего пола. ЭКГ регистрировали до и после введения «Фитодиабетол», которые вводили орально 5-10 мл/кг.

Анализ ЭКГ показал, что всех случаях опытах животного получившие «Фитодиабетол» в дозе 5-10 мл/кг достоверных изменений частоты сердечных сокращений, интервалов не было, а амплитуды зубцов ЭКГ заметно увеличивалось... Ритм во всех случаях был синусовый, сократительная способности миокарда предсердий (зубец Р) и желудочков (QRS) нормальная и изменений в проводящей системе не было.

Следовательно, «Фитодиабетол» на сердечно-сосудистых системах отрицательного влияния не оказывает при повышенном давлении кратковременно снижает артериальное давление.

Изучение местно-раздражающие действие жидкого экстракта «Фитодиабетол» в первой серии экспериментов конъюнктивальной пробы ставилось на крысах, морских свинках и кроликах. В каждой опытной группе было по 3-5 голов животных.

Изучаемый жидкий экстракт «Фитодиабетол» в различных концентрациях и в виде методом упаривания в деалкоголизированной форме по 1-3 наносили в

конъюнктивальной мешок правого глаза. Правого глаза морских свинок и кроликов. Левый глаз был контрольным. Реакцию конъюнктивы на вещество в концентрации 0,25-1,0% раствора и деалкоголизированной формы в разведении 1/10 оценивали через 5',15',30',60' минут и через 6 и 24 часа. Наблюдение за состоянием конъюнктивы показали, что изучаемый БАД в изученных концентрациях существенно не оказывает раздражающее действие на конъюнктивы глаза опытных животных.

Во второй серии опытов изучаемого БАДа в концентрациях 10, 20, 40% ного раствора вводили на слизистую полость рта крыс, морских свинок и кроликах в объеме 2-5 капель, а также путем орального введения специальным металлическим зондом в дозах 2,5-5 мл/кг и 10 мл/кг.

На слизистую ЖКТ-та. При этом было выявлено что после введения жидкого экстракта в изучаемых дозах слизистой оболочке полости рта и ЖКТ-та животных были нормальными и без признаков раздражения и изменения. В третьей, серии эксперимента на мышах и крысах изучали раздражающих действие Фитодиабетол на кожу. При этом в течении двух недель смазывали предварительно выстриженную шерсть размером 1см ×1см и 2см×2 см, изучаемых концентрациях и деалкоголизированной форме. Исследования показали, что изучаемый жидкий экстракт Фитодиабетол и её деалкоголизированная форма не обладает местно-раздражающим действием, так как при визуальном макроскопическом осмотре кожи



животных по сравнению с контрольными особями изменения не выявлено.

Следовательно, можно сказать, что изучаемых БАД в исследованиях концентрациях не оказывает местно-раздражающего действия.

Изучение кумулятивных свойств «Фитодиабетол»

Опыты по изучению кумулятивных свойств, проводили на 30 крысах, массой 138-155 г обоего пола животных раздели на три группы по 10 крыс в группе. Изучаемый жидкий экстракт «Фитодиабетол» орально специальным металлическим зондом с оливой вводили в первую группу животных, а во вторую группу вводили деалкоголизированной формы «Фитодиабетол». Третья группа была контрольная. В первые 5 дней вводили изучаемый БАД соответственно по 1 мл и 1,5 мл на массу животных.

В следующие 5 дней соответственно по 2 мл и по 2,5 мл на массы животных, а на 11-15 день эксперимента по 2,5 мл и 4,0 мл на массу и в следующие 5 дней соответственно по 3 мл и 6 мл на массы животных.

Контрольная группа получала дистиллированную воду по той же схеме

и дозе обмена. За состоянием животных следили визуально, при этом основным вниманием обращали на общее состояние, реакции на внешние раздражители, аппетит и на массу животных.

Выводы.

Эксперименты показали, что как в опытных, так и в контрольных группах животных достоверных различий в массе не отмечено. Слизистой оболочке и шерстяной покров всех животных были без особых изменений. Животные с удовольствием употребляли пищу и воду. Частота дыхания у всех групп животных были одинакова, расстройства со стороны ЖКТ не наблюдалось. При вскрытии животных на 20 й день опыта наблюдали нормальную гистоморфологическую картину внутренних органов у всех животных со стороны жизненно важных внутренних органов визуальных изменений не выявлено.

Таким образом, изучаемое вещество «Фитодиабетол» в изученных концентрациях и деалкоголизированной форме кумулятивных свойств не обладает.

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ҲАЙВОНЛАР РИВОЖЛАНИШ ЦИКЛИ ПРИНЦИПЛАРИНИНГ ЯНГИЧА ТАҲЛИЛИ ҲАҚИДА

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KALIT SO'ZLAR

ривожланиш цикл,
онтогенез, ривожланиш
цикл принциплари,
уруғланиш, эмбрион
қаватлари, нейродерма,
кўпайиш.

ANNOTATSIYA

Ҳайвонот дунёси турларининг кўплиги ва яшаш шароитини турли-туманлиги уларнинг ривожланиш циклини ҳам ҳар бўлишига олиб келган. Бу эса ривожланиш цикл ягона қонун ва принципларга бўйсинамаслигини билдиради. Бундай универсал қонун ва принципларни ишлаб чиқиш кўплаб таҳлилий маълумотларни талаб этади. Ушбу мақолада ҳайвонларнинг ривожланиш цикли принципларининг янги таҳлили ақида сўз юритилади.

Асосий қисм

Ривожланиш цикл принципи (лотинча *princeps*-бирламчи, асос) дейилганда, у қандай тартиб, қоида ва қонунларга асосланиши тушунилади [8]. Онтогенез жинсий хужайралар етилишидан табиий ўлимгача давом этса, ривожланиш цикл кўпайишдан кўпайишгача давом этади. Демак, онтогенез ривожланиш циклга нисбатан узоқ давом этади [7, 14, 15]. Ҳайвон ёки ўсимликлар ривожланиш (ҳаёт) циклининг узоқлиги бир йил давомидаги авлодлар (генерация) сони (кўпчилик умуртқасиз ва айрим умуртқали ҳайвонларда) ёки бир авлод учун ўтган баҳор (йиллар) сони (айрим умуртқасиз ва кўпчилик умуртқали ҳайвонларда) билан аниқланади [9, 16, 17].

Ривожланиш циклининг принциплари. Ривожланиш цикл куйидаги принципларга асосланади:

1. Ривожланиш цикли биологиянинг асосий тушунчаларидан бири сифатида қаралиши керак. Ривожланиш циклда жинсий вояга етган организм асосий аҳамиятга эга эмас. Чунки организм жинсий вояга етмасдан ҳам кўпайиши мумкин. Шунинг учун организмнинг ўзи ривожланиш цикл натижаси ҳисобланади. Барча ҳайвонларнинг ривожланиш цикли турлича кўринишда ўтса ҳам, ўхшаш босқичлардан иборат бўлади. Янги индивиднинг ҳаёти тухум ва сперматозоиднинг етилишидан бошланади ва уларнинг генетик



материали билан аниқланади [10, 11, 13].

2. Классик ривожланиш цикл: гаметогенез, уруғланиш, майдаланиш, гастрюляция, эмбрион варақларининг ҳосил бўлиши, гистогенез, органогенез, метаморфоз, жинсий вояга етиш, янги авлод ҳосил бўлиши даврларидан иборат. Қарилик ва ўлим онтогенезга тааллуқли бўлган ҳодисалардир [2, 4, 6]. Уруғланиш туфайли қуйидаги жараёнлар ниҳоясига етади:

а. Уруғланиш тухумни гаплоид пронуклеус ҳосил бўлишига олиб келадиган иккинчи мейозни тугашини стимуллайти. Бу гаплоид пронуклеуслар (тухум ва сперматозоид) цитоплазмада қўшилиб хромосомаларнинг диплоид набори ҳосил бўлади.

б. Уруғланиш туфайли тухум цитоплазмаси шундай аралашадики, натижада янги ривожланиш жойи пайдо бўлади [1, 3, 5].

в. Уруғланиш натижасида молекулалар майдаланиш бошланиши ва кейинги ривожланиши учун зарур бўлган даражада фаоллашади. Агар уруғланиш содир бўлмаса тухум ва сперматозоид тезда ўлади. Майдаланишдан кейин тухум ҳажми олдингидек қолади, лекин кўп марта бўлинади. Анимал ярим шар вегетатив ярим шарга нисбатан тез бўлинади. Шунинг учун вегетатив ярим шар ҳужайралари йирик бўлади. Анимал ярим шарда суюқлик тўпланиб бўшлиқ ҳосил бўлади ва у бластоцел деб аталади. Бу бўшлиқда гастрюляция жараёнида ҳужайралар ҳаракатланади [1, 3, 12].

3. Ривожланиш цикл жинсий кўпайиш орқали бориши шарт эмас.

Айрим организмлар ривожланиш цикли давомида ҳам жинсий, ҳам жинсиз кўпаяди. Баъзи организмлар ривожланиш цикли давомида фақат жинсиз (оддий амеба), айримлари эса фақат жинсий йўл (сут эмизувчилар) билан кўпаяди.

“Кўпайиш” ва “жинсий жараён” ҳар хил тушунчалар бўлиб, кўпайиш натижасида янги организм пайдо бўлади, жинсий жараёнда эса иккита ҳар хил жинсли индивидларнинг генлари янги кўринишда комбинацияланади. Бўлиниш орқали кўпайганда жинсий жараён содир бўлмайди ва унда генлар комбинацияланмайди [2, 4, 6].

Бактерияларда кўпайиш содир бўлмасдан, жинсий жараён генларни фимбрилар орқали бир-бирига ўтказганда намаён бўлади. Бир ҳужайралилар ҳам кўпаймасдан генларини янгича комбинациялашлари мумкин. Инфузория туфелька бўлиниш орқали кўпаяди, конъюгация эса жинсий жараён ҳисобланади. Эволюция жараёнида бу икки ҳодисани эукариотларда бирлашуви жинсий кўпайишнинг пайдо бўлишига ва такомиллашувига олиб келган [2, 6, 15].

Жинсий кўпайиш пайдо бўлиши билан тирик организмларда иккита муҳим хусусият пайдо бўлди:

1. Жинсий ҳужайраларда мейоз механизмини пайдо бўлиши билан хромосомалар набори диплоиддан гаплоидгача қисқаради.

2. Икки хил гаметалар ўзаро қўшилади, сингамия ва синкарион жараёнлари содир бўлади. Бир тур гаметалари бир-бирини “танийди”. *Chlamydomonas* дастлаб хивчини билан бир-бирини танийди. Иккита



индивиднинг хивчинлари бир-бирининг атрофида шундай айланиб ўраладики, натижада мембрананинг махсус жойи бир-бирига қўшилиб қолади. Ўша жойда турга хос бўлган цитоплазма қўшилиши жараёни содир бўлади. Хивчинлар аглитинациясидан кейин плус индивид уруғланиш найи ҳосил қилиш йўли билан жинсий хужайраларнинг ўзаро қўшилишини фаоллаштиради. Уруғланиш найи минус индивиднинг махсус жойи билан қўшилишни ва бирлашишни тезлаштиради [2, 4, 6, 10].

Бир хужайрали эукариотлар мураккаб тузилган организмларга хос бўлган маълум жойда ва маълум вақтда оқсил ҳосил бўлишини бошқарадиган, айрим хромосома ва генлар структураси эукариотларнинг кейинги эволюцияси давомида ўзига хос бўлиши, митоз ва мейоз, алоҳида хужайралар ўртасидаги алоқанинг жинсий кўпайиш билан боғлиқ ҳолдалиги пайдо бўлган. Кўп хужайралилар эволюцияси даврида бу хужайралар ўртасидаги ўзаро таъсирлар янада кўпроқ аҳамиятга эга бўлган.

Эволюциянинг энг муҳим натижаси кўп хужайрали организмларнинг келиб чиқишидир. Бир хужайралилардан кўп хужайралилар кўплаб йўллар билан келиб чиққан бўлиши мумкин. Шулардан репродуктив хужайра бўлинишини тартибга солиниши ва кейинги ривожланиши даврида дифференциаллашиб ҳар хил хужайраларни ҳосил қилиши йўли билан кўп хужайралилар келиб чиққанлиги муҳим аҳамиятга эга [2, 4, 17].

4. Майдаланиш даврида кўплаб бластомерлар ҳосил бўлади ва бу жараён хужайра бўлинишидан фарқ қилади.

Хужайра бўлиши натижасида хужайра, зигота ёки бластомер майдаланиши туфайли бластомер ҳосил бўлади.

5. Гастроуляция даврида бластомерлар маълум тартибга келиб, эмбрионнинг тўртта варағини (эктодерма, энтодерма, мезодерма, нейродерма) ҳосил қилади [7, 14, 18].

Эволюцион трансформация жараёнида ривожланаётган хужайралар ресурсида катта ўзгаришлар содир бўлади. Бирламчи ва иккиламчи оғизлилар эмбриони майдаланишининг охирида бу ресурсларда фарқлар пайдо бўлади (Иванов, 1937; Berril, 1955, 1961; Ruppert, 1997). Умуртқасиз ҳайвонлар эмбрионида гастроуляция ва гистогенез нисбатан эртароқ бошланади, умуртқали ҳайвонлар эмбрионида эса бу жараён кўплаб майдаланишдан кейин бошланади ва неотения пайдо бўлишига олиб келиши ҳам мумкин (Berril, 1961). Кейинчалик Б. Холл [18] эмбрион варақлари тўғрисидаги назарияни қайта кўриб чиқиш жараёнида уларнинг интенсив эволюцион ўзгаришини ҳисобга олиб, умуртқалилар нерв тароғи хужайралари материали тўртинчи эмбрион варағини ҳосил қилади, деб ҳисоблашни таклиф этди. Б.Холл ғоясини ривожлантириб, хордалиларнинг барча нейрал пластинкасини ва у билан боғлиқ бўлган нерв тароғи хужайралари материални хордалиларнинг тўртинчи эмбрион варағи – нейродерма (Исаева, 2015, 2016; Озернюк, Isaeva, 2016), деб номлаш таклиф этилди. Хорддларда нейродерманинг тўртинчи эмбрион қавати сифатида пайдо бўлиши ва ундан нерв найини ҳосил бўлиши йирик ароморф эволюцион инновация бўлиб,



нейрогенез ва мия эволюцияси тезлашиши учун зарур бўлган кўплаб хужайра ресурсини пайдо бўлишига олиб келган. Шуларни барчасини умумлаштирган ҳолда, умуртқалиларда фақат нерв сиситемаси ҳосил бўлишини нейродерма деб ҳисобламасдан, мезодермадан ҳосил бўладиган ўқ органларни, яъни нерв системаси ва ҳорданинг ҳосил бўлишини **нейродерма** деб номлашни таклиф этмоқчимиз [14]. Чунки хорда ва ундан ҳосил бўладиган умуртқа поғонасининг пайдо бўлиши умуртқалиларнинг юришини тезлашишига ва ареалини кенгайтишига, озиқ моддалар топишига ёрдам бериб, ер шарида кенг тарқалишига, шунингдек, уларнинг организмни мураккаблашувига олиб келган. Шундай қилиб, **эмбрион ривожланиши даврида 4 та қават: эктодерма, энтодерма, мезодерма, нейродерма** ҳосил бўлади, деб айтишга ҳозирча етарли асослар бор. Аммо бу соҳада келажакда олиб бориладиган илмий тадқиқот ишлари туфайли бу мулоҳазалар янги имий далиллар билан бойитилиши лозим [14].

6. Органогенез жараёнида эмбрион қаватлари бир-бирига таъсир этиши (индукция) туфайли органлар ҳосил бўлади. Бу жараёнда турли органларни ҳосил қиладиган тўқима хужайралари тузилиши ва физиологик хусусиятларида ҳам фарқлар пайдо бўлади. Жумладан, ҳаракатланишга ёрдам берадиган хужайралар энергетик, овқат ҳазм қилишга ихтисослашган хужайраларда транспорт хусусиятлар устунлик қилади.

7. Гаметогенез жараёнида тухум ва сперматозоид ҳосил бўлади.

Ривожланиш цикл ана шу жараёнларнинг бошланишидан бошланади. Уруғланишдан туғилишгача ёки тухумдан чиққунча бўлган барча жараёнлар эмбриогенез дейилади ва у турлича бўлса ҳам бластула, гастрюляция, органогенез ва жинсий дифференциация, турли туман личинка даврларидан иборат бўлади.

8. Эмбрионнинг озиқа билан таъминланишнинг учта усули бор: эмбрионни тухумнинг сариқлик оддаси билан озиқланиши; озиқланадиган личинкалик босқични эмбрион ва жинсий вояга етган босқичлар ўртасида жойлашуви туфайли личинка орқали озиқланиш; йўлдош (трофоцит) орқали эмбрионнинг она организми ҳисобидан озиқланиши [4, 6, 7].

9. Ривожланиш цикл ташқи муҳитнинг ноқулай шароитларига мослашган ва бошқа ҳайвонлар ривожланиш цикли билан координациялашган бўлиши керак. Масалан, паразит чувалчангларнинг айрим босқичлари хўжайиннинг айрим босқичларига мослашган бўлади. Паразитнинг маълум босқичи ўзи мослашган босқичдан юқори ёки қуйида турувчи босқични анатомио-физиологик жиҳатдан мослашмаганлиги туфайли зарарлай олмайди ёки паразитлик қила олмайди.

10. Ривожланиш цикл даврида оёқ ҳосил бўлмасдан думни ташлаб юбормаслик талаб этилади. Чунки бундай ҳолатда ҳаракат сусайиб, озиқа ва қулай яшаш жойи топа олмасдан ўлим содир бўлади.

11. Индивидуал ривожланиш даврида ҳар бир орган жойлашувининг ўзига хос қонуниятлари бор ва шу



қонуният асосида жойлашади. Бу жараёнлар генларнинг координацион, органларнинг индукцион таъсири орқали бошқарилади [5, 10].

12. Бирламчи орғизлилар ва иккиламчи орғизлилар иккита, ҳар хил ривожланиш усулига эга. Бирламчи орғизлиларда дастлаб оғиз, иккиламчи орғизлиларда дастлаб анус, кейин оғиз ҳосил бўлади.

13. Ривожланиш цикл жинсий хужайралар етилишини бошланишидан бошланиб, индивид жинсий вояга етиб жинсий хужайра етиштиришини бошланишигача давом этади. Қарилик ва ўлим онтогенезга тааллуқли даврларлар ҳисобланади [7, 14].

Содда вольвокслар ривожланиш циклида юксак ҳайвонларга хос бўлган

айрим хусусиятлар ҳам учрайди. Вольвоксларнинг икки тип хужайралари ўртасида вазифалар тақсимланган. Шунинг учун ҳам, амёбалардан фарқ қилиб, вольвоксларда ўлим онтогенезнинг генетик жиҳатдан тартибга солинган охирги босқичи ҳисобланади. Бу ҳодисалар эволюция жараёнида кўп хужайралиларда такомиллашиб, кўпайишнинг янада мураккаб усуллари пайдо бўлишига олиб келган.

Шундай қилиб, ривожланиш цикл ана шу принциплар асосида ўрганилса, олинган маълумотлардан назарий ва амалий хулосалар чиқариш ва улардан амалиётда фойдаланиш имкониятини бериши мумкин.

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СОВЕРШЕНСТВОВАНИЕ ЛЕЧЕНИЯ ХРОНИЧЕСКОГО КАТАРАЛЬНОГО ГИНГИВИТА У ДЕТЕЙ

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КЛЮЧЕВЫЕ СЛОВА

Заболевания парадонта,
катаральный гингивит,
гингивит у детей,
препарат «Звездочка-
Лор» спрей

АННОТАЦИЯ

Заболевания тканей пародонта сегодня являются одной из самых важных и актуальных проблем в стоматологии. Выпадение зубов, являющихся основным жевательным процессом в детстве, наличие хронических очагов инфекции, нарушение работы жевательно-речевого аппарата, приводящее к снижению качества жизни - это не только важная задача медицины, изучающей патологию пародонта, но и актуальная социальная проблема. Поэтому при обнаружении случаев хронического катарального гингивита у детей в раннем возрасте важно предотвратить их и лечить на ранних стадиях заболевания.

Цель исследования: Освещать современные методы и аспекты лечения хронического катарального гингивита у детей.

Задачи исследования: 1. Изучить основные причины хронического катарального гингивита у детей, процесс передачи этого заболевания, частоту его выраженности в клинических условиях, динамику;
2. Ознакомиться с широким спектром современных методов лечения хронического катарального гингивита у детей, разработанными в развитых странах и в нашей стране в области научных исследований в этой области, выбрать наиболее эффективные методы;

3. Практическое применение препарата «Звездочка Лор» спрея для лечения хронического катарального гингивита у детей с учетом причин заболевания;
4. Ознакомиться с воздействием применяемых препаратов и методов лечения хронического катарального гингивита у детей на молодой организм, имеющимися побочными эффектами и возможными осложнениями после лечения и изучить меры их профилактики;

В возникновении заболеваний мягких тканей парадонта важную роль играют многие факторы: несвоевременная санация, низкий уровень гигиены полости рта, патология внутренних органов, снижение местного и общего



иммунитета, неправильное питание и др. Все вышеизложенного обуславливает необходимость поиска еще более эффективных и современных методов лечения гингивита у детей. Относительно распространенный тип заболеваний пародонта - гингивит, воспаление слизистой оболочки десен. Среди гингивитов преобладающим заболеванием в структуре пародонтоза является катаральный гингивит - 90%. Распространенность гингивита среди населения достигает 98%, причем самый высокий среди них катаральный гингивит наблюдается в основном у детей раннего возраста и у населения в возрасте 13-25 лет. Конечно, гингивит может возникнуть в любом возрасте и у всех категорий населения. Однако у пожилых пациентов относительно часто встречаются относительно тяжелые типы заболеваний пародонта, такие как пародонтит и пародонтоз, а также гингивит, особенно среди детей раннего и активного возраста. Наиболее распространенным типом заболевания пародонта у детей является его воспалительная форма, хронический катаральный гингивит, который, в свою очередь, вызывает специфическое воспаление десен и тканей пародонта в результате воздействия различных эндо- и экзотоксинов, а также осложнения, которые сохраняются даже в зрелом возрасте. Известно множество различных методов успешного лечения хронических катаральных гингивитов, направленных на ликвидацию воспалительного очагов в самом начале развития патологии тканей пародонта. Эпидемиологические данные, проведенные авторами Республики

Узбекистан свидетельствуют о значительной распространенности и интенсивности хронического катарального гингивита у детей и связывают это с нарушениями гигиены полости рта. Их исследования показали, что при регулярном уходе за зубами распространенность гингивитов у детей намного ниже, чем при нерегулярной гигиене полости рта. Однако, как установили исследователи, большинство детей не чистят зубы, или делают это не регулярно, а эпизодически, привычки соблюдения гигиены полости рта у них не выработано. Лечение гингивита, в основном, этиотропное, т.е. направлено на устранение причины основного заболевания, вызвавшего гингивит. Применяется преимущественно местное лечение, однако необходимо помнить, что лечение болезней других органов также способствует скорейшему выздоровлению. Например, если гингивит вызван заболеванием желудочно-кишечного тракта, то лечение сводится не только к санации полости рта, но и лечению основного заболевания.

Материал и методы исследования: следованы 65 детей в возрасте 10-15 лет с заболеванием пародонта в Ташкентский государственный стоматологический институте клиника детской терапевтической стоматологии. У 54 детей 83% выявилось хронический катаральный гингивит. Из 65 детей 39 мальчиков 60%, 26 девочек 40%. Курс лечения проводился в течение 2 недель. У обследуемых детей определялся исходный уровень гигиены полости



рта по Ю.А.Федорова и В.В.Володкиной (1972). Для определения интенсивности распространения воспалительных явлений в мягких тканях пародонта применяли индекс РМА. (С.Parma, 1960)

Больным проводилось профессиональная гигиена полости рта которая состояла из этапов:Мотивация детей к борьбе со стоматологическими заболеваниями. Обучение детей к индивидуальной гигиене полости рта. Удаление над- и поддесневых зубных отложений . Полировку поверхности зуба.

Устранение факторов способствующих скоплению зубного налёта.

Мы в поиске свои научные исследования применяли новый препарат «Звездочка Лор» спрей для лечения хронического катарального гингивита у детей. Звездочка ЛОР спрей является средством для локального лечения заболеваний слизистой оболочки полости рта и лор органов. Его применяют при симптоматическая терапия болевого синдрома воспалительных заболеваний полости рта и ЛОР-органов в том числе хронических гингивитах.

Результаты: После предварительной подготовки больные дети были разделены на 3 группы в зависимости от метода лечения (табл. 1)

Группа	Число детей	Схема лечения
1-я Основная	21	Звездочка ЛОР спрей+0,1% раствора хлоргексидина
2-я – контрольная	21	Лечение традиционным методом
3-я практически здоровые дети	21	Наблюдение

Таблица 1. Распределение детей в зависимости от схемы лечения

У обследованных детей в результате проведенных исследований получены следующие данные:1-я группа: Гигиенический индекс улучшение гигиены полости рта на 1,4 баллов, хорошая гигиена полости рта; индекс РМА(парадонтальный индекс) улучшение на 20 %; индекс кровоточивости десен на 32 % .И длительность лечения составило 14 дней,выздоровление наступает на 5-6 день лечения. 2-я группа Гигиенический

индекс улучшение гигиены полости рта на 0,4 баллов; индекс РМА улучшение на 9 %; индекс кровоточивости десен на 15%. И длительность лечения составило 14 дней,выздоровление наступает на 7-8 день лечения.3-я группа Гигиенический индекс улучшение гигиены полости рта на 0,4 баллов, практически не изменена гигиена полости рта; индекс РМА изменение на 2 %; индекс кровоточивости десен улучшен на 5 %.И длительность



наблюдения составило 14 дней
Заключение: Высокая
распространенность заболеваний
пародонта в регионах Республики
Узбекистан как среди взрослого
населения, так и среди подростков,
диктует необходимость поиска
эффективных методов их
профилактики и лечения. Препарат
«Звездочка Лор» спрей при гингивитах
у детей купирует воспалительный
процесс через 5-6 дня, тогда как в

традиционном лечении через 7-8 дней, а
также оказывает выраженное
антимикробное действие на
микрофлору полости рта по сравнению
с традиционным методом лечения.
«Звездочка Лор» спрей эффективен по
сравнению с традиционным методом
лечения и рекомендуется для широкого
использования при различных формах
гингивита и других заболеваниях СОПР
у детей.

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REVMATOID ARTRITNING ETIOLOGIYASI VA PATOGENEZIGA OID ZAMONAVIY QARASHLAR

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KALIT SO'ZLAR

revmatoid artrit,
bo'g'imlarning
shikastlanishlari,
interlyukin, irsiy moyillik,
immunoglobulin G,
aminokislotalar, viruslar.

KIRISH

Revmatoid artrit — murakkab bo'g'imlarning shikastlanishi bilan kechadigan biriktiruvchi to'qimalarning tizimli kasalligidir. Kasallikning nomi qadimgi yunon tilidan olingan bo'lib, bo'g'imlar yallig'lanish ma'nosini beradi. Immun buzilish birinchi marta revmatoid artrit (RA) patogenezida revmatoid omillar deb nomlanuvchi anti-immunoglobulin G (IgG) antikorlarini kashf qilish bilan bog'liq bo'lib, dastlab Erik Vaaler tomonidan, keyin esa 1940-yillarda H. M. Rose tomonidan to'liq tasvirlangan.

Biroq, immunitet reaksiyalarining kasallikka qanday hissa qo'shishi haqidagi tushunchalar so'nggi 50 yil ichida keskin rivojlandi.

Revmatoid artrit rivojlanishida avtoreaktivlik asosiy kalit vazifasini

ANNOTATSIYA

Zamonaviy tushunchalarga ko'ra, revmatoid artrit (RA) murakkab multifaktorial, surunkali, barqaror progressiv, tizimli otoimmun kasallik bo'lib, u yarali-destruktiv shikastlanishlar va bo'g'imlarning yo'q qilinishi bilan organizmdagi uzoq muddatli yallig'lanish jarayoniga asoslangan kasallik hisoblanadi. Mazkur maqola Revmatoid artrit kasalligiga zamonaviy qarashlar to'g'risida bo'ladi.

bajarsada, shu bilan birga immunologik va to'qimalardan mexanizmlar kasallikning patogenezini kechishini boshqaradi.

Shunday qilib, Revmatoid artrit tug'ma immunitet buzilishi, shu jumladan immun kompleks vositachiligida komplement faollashuvi, asosan translatsiyadan keyin o'zgartirilgan oqsillarni o'z ichiga olgan "o'z" antijenlarga qarshi moslashtirilgan immun javoblar, tartibga solinmagan sitokin tarmoqlari, osteoklast va xondrositlarning faollashuvi va rezident stromal hujayralarni chiqarilishi bilan tushuntiriladi bu o'z navbatida kasallikning rivojlanishini qo'llab-quvvatlovchi yarim avtonom xususiyatlarni rivojlantiradi.

Bugungi kunda Revmatoid artritning kelib chiqishi noma'lum bo'lib, bo'g'imlarning sinovial to'qimalari, xaftaga



va suyaklarning yallig'lanish o'zgarishi bilan tavsiflanadi va kamroq tez-tez bo'g'imdan tashqari. So'nggi yillarda RA genetik va epigenetik komponentlar asosida paydo bo'lishi aniq bo'ldi, ammo atrof-muhit sigaretaning tutuni, chang ta'siri va ayniqsa "ichki" muhitni ifodalovchi mikrobioma kabi muhim rol o'ynashi kerak. Moslashuvchan immunitet tizimining tarkibiy qismlari va tug'ma immunitet tizimi o'rtasida muhim o'zaro bog'liqlik mavjud. Hujayra va gumoral immun javobidagi anomaliyalar avtoantikorlarning, xususan, revmatoid omillar (RF) va translatsiyadan keyin o'zgartirilgan oqsillarga (Tsitrulinatsiya (ACPA) kabi turli modifikatsiyalarga qarshi antikorlarni o'z ichiga olgan anti-modifikatsiyalangan protein antikorlari (AMPA)) antikorlarining paydo bo'lishiga olib keladi.), karbamilatsiya (aCarP) va atsetilatsiya (AAPA)), shuningdek, T va B-limfotsitlarning sinoviumga immigratsiyasi. Tug'ma immun tizimining faol faollashuvi ham mavjud bo'lib, unda ishtirok etgan to'qimalarda monosit / makrofag tizimining yuqori faollashtirilgan hujayralari mavjud. RA ning klinik va gistomorfologik ko'rinishi alohida hodisalarning natijasidir: Yallig'lanish qo'shma og'riqlar, shish va keyinchalik xaftaga va suyakning nobud bo'lishi, shuningdek, araxidon kislotasi metabolitlari va turli xil yallig'lanish sitokinlari keltirib chiqaradigan tizimli ko'rinishlar bilan namoyon bo'ladi. Taxmin qilinishicha, kasallik irsiy moyilligi bo'lgan shaxslarda immun tizimining buzilishiga olib keladigan infeksiya natijasida rivojlanadi; bunda to'qimalarda saqlanadigan va bo'g'imlarning zararlanishiga olib keladigan immun

komplekslari (antitanalar, viruslardan va boshqalardan iborat) hosil bo'ladi. Ammo revmatoid artritni antibiotiklar bilan davolashning samarasizligi, ehtimol, bu taxminning noto'g'riligidan dalolat beradi. Kasallik juda erta sodir bo'ladigan yuqori nogironlik (70%) bilan ajralib turadi. Kasallik tufayli o'limning asosiy sabablari infeksiyon asoratlari va buyrak yetishmovchiligi hisoblanadi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Revmatoid artritning rivojlanishida jinsiy gormonlarning ishtiroki Revmatoid artritni rivojlanish xavfini kamaytiradigan ekzogen estrogenlarning (og'iz kontratseptivlari) ta'sirini tasdiqlaydi. Ushbu kasallikning paydo bo'lishining tashqi muhit omillari orasida birinchi navbatda infeksiyaning roli qabul qilinadi. Revmatoid artritning yuqumli etiologiyasi uchun klassik epidemiologik dalillar mavjud emas, ammo bu uning genetik moyil organizmda ishtirok etishini istisno etmaydi, bu hayvonlarni o'rganishda isbotlangan.

Bugungi kunga qadar Revmatoid artrit sabablari aniqlanmagan. Uning rivojlanishida ham genetik, ham atrof-muhit omillarining roli ekvivalent bo'lib, ular orasida infeksiya, immunizatsiya, ovqatlanish, qon quyish, chekish, UV nurlanishi va boshqalar ishtirok etadi.

Kasallikning genetik moyilligi Revmatoid artrit bilan kasallanganlar oilalarida uning yuqori to'planishidan dalolat beradi. Erta yoshda uning qarindoshlari Revmatoid artrit bilan kasallangan oilalarda tez-tez uchraydi. Ushbu kasallikka genetik moyillikning roli uning monozigotik egizaklar (12-32%) orasida dizigotik egizaklar (3,5-9%) bilan



solishtirganda yuqori chastotasi bilan tasdiqlanadi.

Revmatoid artrit rivojlanishining endogen omillaridan jinsiy gormonlar ma'lum rol o'ynaydi, bu ayollarda kasallikning yuqori darajasi, shuningdek homiladorlikning Revmatoid artritning kechishiga ijobiy ta'siri va tug'ruqdan keyin yoki uning kuchayishi bilan tasdiqlanadi. uzilish. Revmatoid artrit bilan og'riq ayollarda androgenlar - testosteron va dehidroepiandrosteron etishmovchiligi mavjud, erkaklarda ham testosteron darajasi past. Revmatoid artrit uchun o'ziga xos (yuqumli) qo'zg'atuvchi aniqlanmagan, ammo ko'plab da'vogarlar mavjud: mikoplazma, parvovirus B19, sitomegalovirus (CMV), 6-turdagi herpes simplex virusi, Epstein-Barr virusi (EBV). Revmatoid artritni o'z ichiga olgan autoimmun kasalliklarning rivojlanish mexanizmlaridan biri bu "molekulyar taqlid" dir. Mikroblar va viruslar mezbon oqsillarga o'xshash protein tuzilmalarini (aminokislotalar ketma-ketligini) o'z ichiga olishi mumkin. Patogenni yo'q qilish uchun immun reaksiyasi "teskari yo'nalish" bo'lishi mumkin, natijada o'z-o'zidan antijenler bilan o'zaro reaksiya paydo bo'ladi, ular tuzilishi jihatidan begonalarga o'xshaydi.

Revmatoid artritning rivojlanish xavfi, kechish og'irligi va rivojlanishida ham genetik omillar aniq rol o'ynaydi. Monozigotali egizaklarda taxminan 12-15% hollarda, umumiy populyatsiyada 1% va dizigotali egizaklari yoki boshqa birinchi darajali qarindoshlar uchun taxminan 2-5% holatlarda RA ochrashi buni ko'rsatdi. Bu nisbatan past muvofiqlik boshqa ko'plab omillarni, shu jumladan patogenezdagi atrof-muhit va

mikrobiomani ham o'z ichiga oladi. Shuni ham yodda tutingki, genlar ketma-ketligi irsiylikning yagona hal qiluvchi omili emas va epigenetik belgilar ham, ayniqsa monozigot egizaklar uchun hissa qo'shadi.

Revmatoid artrit uchun eng muhim genetik xavf alleli II toifadagi asosiy gistologik moslik lokusida joylashgan bo'lib, lokus genetik ta'siri taxminan 40% ni tashkil qiladi. MHC II sinf HLA-DR4 allellari bo'lgan shaxslarda RA rivojlanishining ehtimollik nisbati taxminan 5: 1 ni tashkil qiladi.

HLA-DR va RA o'rtasidagi bu bog'liqlik dastlab 1970-yillarda tasvirlangan bo'lib, HLA-DR4 Revmatoid artrit bilan kasallangan bemorlarning 70 foizida, nazoratdagilarning taxminan 30 foizida kuzatilgan. Umumiy "sezuvchanlik epitopi" (SE) DRb zanjirining uchinchi gipero'zgaruvchan hududida 70 dan 74 gacha bo'lgan aminokislotalarda aniqlangan.

NATIJALAR

So'nggi o'n yilliklarda revmatoid artrit lezyonlarni davolashning asosiy tamoyillari shakllantirildi, ular butun dunyo bo'ylab mutaxassislar tomonidan kuzatilmoqda. Romatoid artrit jarayonlarni davolash oson emas, natija ko'p jihatdan tekshiruv natijalariga, tashxisga va kasallikning kutilayotgan prognoziga bog'liq. Erta bosqichda revmatoid patologiyani aniqlash qiyin, chunki shunga o'xshash belgilar boshqa kasalliklarda ham kuzatiladi. Shuning uchun Revmatoid artritni aniqlash va batafsil tashxisni o'rnatishga katta ahamiyat beriladi, bu esa ushbu bemorda kasallikning borishini bashorat qilish va tegishli terapevtik choralarni belgilash imkonini beradi.



Revmatoid artriti davolashning yangi avlodi, faol terapevtik choralarni erta tayinlash bilan patologik jarayonni to'xtatish va hatto orqaga qaytarish mumkin bo'lgan klinik jihatdan tasdiqlangan haqiqatni hisobga oladi. Shuning uchun asosiy maqsad kasallikni adekvat davolashni tayinlash bilan erta aniqlash va darhol vazifalar:

- og'riq sindromini yo'q qilish;
- kasallikning rivojlanishini bostirish;
- barqaror remissiya holatiga erishish;
- harakat buzilishining oldini olish;
- bemorning hayot sifatini yaxshilash.

Revmatoid artriti davolashning zamonaviy taktikasi agressiv taktika bo'lib, bemorga asosiy (asosiy) yallig'lanishga qarshi dorilarning (DMARDs) maksimal dozalari bilan kompleks davolash buyuriladi. Bunday holda, so'rov natijalariga ko'ra, yallig'lanishga qarshi preparatlar tanlanadi. Har chorakda bir marta davom etayotgan asosiy terapiya samaradorligini tekshirish uchun joriy tekshiruv o'tkaziladi. Dori terapiyasi tarkibiga biologik preparatlar majburiy ravishda kiritiladi.

MUHOKAMA

Revmatoid artriti kasalligi infeksiyon-allergik kasalliklar guruhiga kiradi. Rевmatoid artritda, asosan, bo'g'in biriktiruvchi to'qimasining yallig'lanishi bilan kechadi. Rевmatoid artritning kelib chiqish sabablari aniqlanmagan.

Revmatoid artritning dastlabki bosqichlarida bo'g'imlarning shikastlanishi beqaror bo'lishi mumkin va bir necha oy yoki hatto yillar davomida o'z-o'zidan yo'qoladi. Yallig'lanish jarayonining rivojlanishi bilan doimiy poliartrit

bemorlarning 70 foizida qayd etilgan. Qoida tariqasida, ikkinchi-uchinchi metakarpofalangeal, proksimal interfalangeal va bilak bo'g'imlari, qoida tariqasida, RAd, kamroq tez-tez metatarsofalangeal bo'g'inlar ishtirok etadi. Keyin lezyonning chastotasi tizza, tirsak, oyoq Bilagi zo'r bilan kuzatiladi. Ba'zi mualliflar katta bo'g'inlarning kechroq ishtirok etishini sinovial membrana yuzasining artikulyar xaftaga nisbati yuqori bo'lganligi bilan izohlashadi. Bizning ma'lumotlarga ko'ra, kasallikning 87 foizida hammasi qo'llarning kichik bo'g'imlari, 9,7 foizida - katta (tizza, elka) shikastlanishi bilan boshlangan. Doimiy progressiv poliartrit 43% da, bemorlarning 57% da remissiya davrlari bilan to'lqinli kursga ega bo'lgan.

Revmatoid artritga eng yaqin havolalarga ega bo'lgan SEga DRB*0401, DRB*0404, DRB*0101 va DRB*1402 kiradi. RA bilan og'riq bemorlarning 90% dan ortig'i ushbu variantlardan kamida bittasini ifodalaydi. Shuningdek, ekstra-artikulyar ko'rinishlar va eroziyaning rivojlanishi kabi kasallikning kuchayishi bilan bog'liq. SE mintaqasi asosan qayta ishlangan peptidlarni T hujayralariga taqdim etish uchun bog'laydigan antigenni bog'lovchi trubadan uzoqda joylashgan bo'lib, bu ularning aniq hissa qo'shadigan roli haqida ba'zi savollar tug'dirdi. QKRAA o'z ichiga olgan molekulalar bilan bog'langan RAga xos peptidlar aniqlash qiyin edi.. Ushbu kuzatish SE ham qisman timusdagi T hujayralari repertuarini shakllantirish, hujayra ichidagi HLA-DR savdosi va antigen yuklanishini o'zgartirish yoki autoantigen sifatida xizmat qilish orqali qisman hissa qo'shishi mumkin degan fikrga olib keldi.



HLA dan tashqari ACPA+ RA. Revmatoid artrit bilan bog'liq SNPlar immun genlar atrofida to'planishga moyildir. Revmatoid artritning genetik arxitekturasida yaqinda keng ko'lamda ko'rib chiqildi. Qisqacha aytganda, individual SNPlar odatda xavfga ozgina hissa qo'shadi koeffitsientlar odatda 1,05 dan 1,2 baravar oralig'ida bo'ladi, ammo bu past funktsional ta'sirni keltirib chiqarishi shart emas. Ushbu genlarning kombinatsiyasi xavfni oshirish uchun potentsial o'zaro ta'sir qilishi mumkin. Masalan, HLA-DR, PTPN22 va TRAF1-C5 SNPlarining nisbatan kam uchraydigan kombinatsiyasi xavfni 40 baravar oshiradi (Firestein & Zvaifler 2002). Shubhasiz, qo'shimcha birikmalar yoki yuqori penetrantlikka ega noyob variantlar mavjud bo'lsa-da, yangi aniqlangan genlarning umumiy xavfga qo'shgan hissasi tobora kichik o'sib bormoqda. Ayniqsa, ACPA bilan kasallangan bemorlarning meta-tahlillari

RA ACPA + kasalligidan ba'zi farqlarni ko'rsatadi, bu "seronegativ RA" ni alohida klinik patologik shaxs deb hisoblash kerak degan fikrga mos keladi (Firestein & Zvaifler 2002).

XULOSA

Shunday qilib, Revmatoid artrit tashxisi va davolash qiyin vazifadir. Biroq, ushbu kasallik uchun zamonaviy terapiya imkoniyatlari ortib bormoqda, bu esa bemorlarning hayot davomiyligi va sifatini yaxshilaydi. Kasallikni davolash, shifokorning ko'rsatmalariga rioya qilish va kasalligingiz haqidagi ma'lumotlardan qo'rqqanlik muhimdir. Siz dam olishingiz, rejimni kuzatishingiz kerak, his-tuyg'ularingizni, qo'rquvlaringizni, tajribalaringizni, kuzatishlaringizni baham ko'rishdan uyalmang. Biz doimo yodda tutishimiz kerakki, ruhiy xotirjamlik, ichki xotirjamlik va ijobiy munosabat kasallikka qarshi kurashda eng yaxshi ittifoqchidir.

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ҲАЙВОНЛАР РИВОЖЛАНИШ ЦИКЛИ ПРИНЦИПЛАРИНИНГ ЯНГИЧА ТАҲЛИЛИ ҲАҚИДА

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KALIT SO'ZLAR

ривожланиш цикл,
онтогенез, ривожланиш
цикл принциплари,
уруғланиш, эмбрион
қаватлари, нейродерма,
кўпайиш.

Асосий қисм

Ривожланиш цикл принципи (лотинча *princeps*-бирламчи, асос) дейилганда, у қандай тартиб, қоида ва қонунларга асосланиши тушунилади [8]. Онтогенез жинсий хужайралар етилишидан табиий ўлимгача давом этса, ривожланиш цикл кўпайишдан кўпайишгача давом этади. Демак, онтогенез ривожланиш циклга нисбатан узоқ давом этади [7, 14, 15]. Ҳайвон ёки ўсимликлар ривожланиш (ҳаёт) циклининг узоқлиги бир йил давомидаги авлодлар (генерация) сони (кўпчилик умуртқасиз ва айрим умуртқали ҳайвонларда) ёки бир авлод учун ўтган баҳор (йиллар) сони (айрим умуртқасиз ва кўпчилик умуртқали ҳайвонларда) билан аниқланади [9, 16, 17].

ANNOTATSIYA

Ҳайвонот дунёси турларининг кўплиги ва яшаш шароитини турли-туманлиги уларнинг ривожланиш циклини ҳам ҳар бўлишига олиб келган. Бу эса ривожланиш цикл ягона қонун ва принципларга бўйсинмаслигини билдиради. Бундай универсал қонун ва принципларни ишлаб чиқиш кўплаб таҳлилий маълумотларни талаб этади. Ушбу мақолада ҳайвонларнинг ривожланиш цикли принципларининг янги таҳлилиясида сўз юритилади.

**Ривожланиш циклининг
принциплари.** Ривожланиш цикл куйидаги принципга асосланади:

1. Ривожланиш цикли биологиянинг асосий тушунчаларидан бири сифатида қаралиши керак. Ривожланиш циклда жинсий вояга етган организм асосий аҳамиятга эга эмас. Чунки организм жинсий вояга етмасдан ҳам кўпайиши мумкин. Шунинг учун организмнинг ўзи ривожланиш цикл натижаси ҳисобланади. Барча ҳайвонларнинг ривожланиш цикли турлича кўринишда ўтса ҳам, ўхшаш босқичлардан иборат бўлади. Янги индивиднинг ҳаёти тухум ва сперматозоиднинг етилишидан бошланади ва уларнинг генетик



материали билан аниқланади [10, 11, 13].

2. Классик ривожланиш цикл: гаметогенез, уруғланиш, майдаланиш, гастрюляция, эмбрион варақларининг ҳосил бўлиши, гистогенез, органогенез, метаморфоз, жинсий вояга етиш, янги авлод ҳосил бўлиши даврларидан иборат. Қарилик ва ўлим онтогенезга тааллуқли бўлган ҳодисалардир [2, 4, 6]. Уруғланиш туфайли қуйидаги жараёнлар ниҳоясига етади:

а. Уруғланиш тухумни гаплоид пронуклеус ҳосил бўлишига олиб келадиган иккинчи мейозни тугашини стимуллайти. Бу гаплоид пронуклеуслар (тухум ва сперматозоид) цитоплазмада қўшилиб хромосомаларнинг диплоид набори ҳосил бўлади.

б. Уруғланиш туфайли тухум цитоплазмаси шундай аралашадики, натижада янги ривожланиш жойи пайдо бўлади [1, 3, 5].

в. Уруғланиш натижасида молекулалар майдаланиш бошланиши ва кейинги ривожланиши учун зарур бўлган даражада фаоллашади. Агар уруғланиш содир бўлмаса тухум ва сперматозоид тезда ўлади. Майдаланишдан кейин тухум ҳажми олдингидек қолади, лекин кўп марта бўлинади. Анимал ярим шар вегетатив ярим шарга нисбатан тез бўлинади. Шунинг учун вегетатив ярим шар хужайралари йирик бўлади. Анимал ярим шарда суюқлик тўпланиб бўшлиқ ҳосил бўлади ва у бластоцел деб аталади. Бу бўшлиқда гастрюляция жараёнида хужайралар ҳаракатланади [1, 3, 12].

3. Ривожланиш цикл жинсий кўпайиш орқали бориши шарт эмас. Айрим организмлар ривожланиш цикли давомида ҳам жинсий, ҳам жинсиз кўпаяди. Баъзи организмлар ривожланиш цикли давомида фақат жинсиз (оддий амеба), айримлари эса фақат жинсий йўл (сут эмизувчилар) билан кўпаяди. “Кўпайиш” ва “жинсий жараён” ҳар хил тушунчалар бўлиб, кўпайиш натижасида янги организм пайдо бўлади, жинсий жараёнда эса иккита ҳар хил жинсли индивидларнинг генлари янги кўринишда комбинацияланади. Бўлиниш орқали кўпайганда жинсий жараён содир бўлмайди ва унда генлар комбинацияланмайди [2, 4, 6].

Бактерияларда кўпайиш содир бўлмасдан, жинсий жараён генларни фимбрилар орқали бир-бирига ўтказганда намаён бўлади. Бир хужайралилар ҳам кўпаймасдан генларини янгича комбинациялашлари мумкин. Инфузория туфелька бўлиниш орқали кўпаяди, конъюгация эса жинсий жараён ҳисобланади. Эволюция жараёнида бу икки ҳодисани эукариотларда бирлашуви жинсий кўпайишнинг пайдо бўлишига ва такомиллашувига олиб келган [2, 6, 15].

Жинсий кўпайиш пайдо бўлиши билан тирик организмларда иккита муҳим хусусият пайдо бўлди:

1. Жинсий хужайраларда мейоз механизмини пайдо бўлиши билан хромосомалар набори диплоиддан гаплоидгача қисқаради.

2. Икки хил гаметалар ўзаро қўшилади, сингамия ва синкарион жараёнлари содир бўлади. Бир тур



гаметалари бир-бирини "танийди". Chlamydomonas дастлаб хивчини билан бир-бирини танийди. Иккита индивиднинг хивчинлари бир-бирининг атрофида шундай айланиб ўраладики, натижада мембрананинг махсус жойи бир-бирига қўшилиб қолади. Ўша жойда турга хос бўлган цитоплазма қўшилиши жараёни содир бўлади. Хивчинлар аглютинациясидан кейин плус индивид уруғланиш найи ҳосил қилиш йўли билан жинсий хужайраларнинг ўзаро қўшилишини фаоллаштиради. Уруғланиш найи минус индивиднинг махсус жойи билан қўшилишни ва бирлашишни тезлаштиради [2, 4, 6, 10].

Бир хужайрали эукариотлар мураккаб тузилган организмларга хос бўлган маълум жойда ва маълум вақтда оқсил ҳосил бўлишини бошқарадиган, айрим хромосома ва генлар структураси эукариотларнинг кейинги эволюцияси давомида ўзига хос бўлиши, митоз ва мейоз, алоҳида хужайралар ўртасидаги алоқанинг жинсий кўпайиш билан боғлиқ ҳолдалиги пайдо бўлган. Кўп хужайралилар эволюцияси даврида бу хужайралар ўртасидаги ўзаро таъсирлар янада кўпроқ аҳамиятга эга бўлган.

Эволюциянинг энг муҳим натижаси кўп хужайрали организмларнинг келиб чиқишидир. Бир хужайралилардан кўп хужайралилар кўплаб йўллар билан келиб чиққан бўлиши мумкин. Шулардан репродуктив хужайра бўлинишини тартибга солиниши ва кейинги ривожланиши даврида дифференциаллашиб ҳар хил хужайраларни ҳосил қилиши йўли

билан кўп хужайралилар келиб чиққанлиги муҳим аҳамиятга эга [2, 4, 17].

4. Майдаланиш даврида кўплаб бластомерлар ҳосил бўлади ва бу жараён хужайра бўлинишидан фарқ қилади. Хужайра бўлиши натижасида хужайра, зигота ёки бластомер майдаланиши туфайли бластомер ҳосил бўлади.

5. Гастрүляция даврида бластомерлар маълум тартибга келиб, эмбрионнинг тўртта варағини (эктодерма, энтодерма, мезодерма, нейродерма) ҳосил қилади [7, 14, 18].

Эволюцион трансформация жараёнида ривожланаётган хужайралар ресурсида катта ўзгаришлар содир бўлади. Бирламчи ва иккиламчи оғизлилар эмбриони майдаланишининг охирида бу ресурсларда фарқлар пайдо бўлади (Иванов, 1937; Berril, 1955, 1961; Ruppert, 1997). Умurtқасиз ҳайвонлар эмбрионида гастрүляция ва гистогенез нисбатан эртaroқ бошланади, умurtқали ҳайвонлар эмбрионида эса бу жараён кўплаб майдаланишдан кейин бошланади ва неотения пайдо бўлишига олиб келиши ҳам мумкин (Berril, 1961). Кейинчалик Б. Холл [18] эмбрион варақлари тўғрисидаги назарияни қайта кўриб чиқиш жараёнида уларнинг интенсив эволюцион ўзгаришини ҳисобга олиб, умurtқалилар нерв тарoғи хужайралари материали тўртинчи эмбрион варағини ҳосил қилади, деб ҳисоблашни таклиф этди. Б.Холл ғоясини ривожлантириб, хордалиларнинг барча нейрал пластинкасини ва у билан боғлиқ бўлган нерв тарoғи хужайралари материалини хордалиларнинг тўртинчи



эмбрион варағи – нейродерма (Исаева, 2015, 2016; Озернюк, Isaeva, 2016), деб номлаш таклиф этилди. Хордлиларда нейродерманинг тўртинчи эмбрион қавати сифатида пайдо бўлиши ва ундан нерв найини ҳосил бўлиши йирик ароморф эволюцион инновация бўлиб, нейрогенез ва мия эволюцияси тезлашиши учун зарур бўлган кўплаб хужайра ресурсини пайдо бўлишига олиб келган. Шуларни барчасини умумлаштирган ҳолда, умуртқалиларда фақат нерв сиситемаси ҳосил бўлишини нейродерма деб ҳисобламасдан, мезодермадан ҳосил бўладиган ўқ органларни, яъни нерв сиситемаси ва ҳорданинг ҳосил бўлишини **нейродерма** деб номлашни таклиф этмоқчимиз [14]. Чунки хорда ва ундан ҳосил бўладиган умуртқа поғонасининг пайдо бўлиши умумртқалиларнинг юришини тезлашишига ва ареалини кенгайишига, озиқ моддалар топишига ёрдам бериб, ер шарида кенг тарқалишига, шунингдек, уларнинг организмни мураккаблашувига олиб келган. Шундай қилиб, **эмбрион ривожланиши даврида 4 та қават: эктодерма, энтодерма, мезодерма, нейродерма** ҳосил бўлади, деб айтишга ҳозирча етарли асослар бор. Аммо бу соҳада келажакда олиб бориладиган илмий тадқиқот ишлари туфайли бу мулоҳазалар янги имий далиллар билан бойитилиши лозим [14].

6. Органогенез жараёнида эмбрион қаватлари бир-бирига таъсир этиши (индукция) туфайли органлар ҳосил бўлади. Бу жараёнда турли органларни ҳосил қиладиган тўқима хужайралари тузилиши ва физиологик хусусиятларида ҳам фарқлар пайдо

бўлади. Жумладан, ҳаракатланишга ёрдам берадиган хужайралар энергетик, овқат ҳазм қилишга ихтисослашган хужайраларда транспорт хусусиятлар устунлик қилади.

7. Гаметогенез жараёнида тухум ва сперматозоид ҳосил бўлади. Ривожланиш цикл ана шу жараёнларнинг бошланишидан бошланади. Уруғланишдан туғилишгача ёки тухумдан чиққунча бўлган барча жараёнлар эмбриогенез дейилади ва у турлича бўлса ҳам бластула, гастрюляция, органогенез ва жинсий дифференциация, турли туман личинка даврларидан иборат бўлади.

8. Эмбрионнинг озиқа билан таъминлашнинг учта усули бор: эмбрионни тухумнинг сариқлик оддаси билан озиқланиши; озиқланадиган личинкалик босқични эмбрион ва жинсий вояга етган босқичлар ўртасида жойлашуви туфайли личинка орқали озиқланиш; йўлдош (трофоцит) орқали эмбрионнинг она организми ҳисобидан озиқланиши [4, 6, 7].

9. Ривожланиш цикл ташқи муҳитнинг ноқулай шароитларига мослашган ва бошқа ҳайвонлар ривожланиш цикли билан координациялашган бўлиши керак. Масалан, паразит чувалчангларнинг айрим босқичлари хўжайиннинг айрим босқичларига мослашган бўлади. Паразитнинг маълум босқичи ўзи мослашган босқичдан юқори ёки қуйида турувчи босқични анатомио-физиологик жиҳатдан мослашмаганлиги туфайли зарарлай олмайди ёки паразитлик қила олмайди.

10. Ривожланиш цикл даврида оёқ ҳосил бўлмасдан думни ташлаб



юбормаслик талаб этилади. Чунки бундай ҳолатда ҳаракат сусайиб, озиқа ва қулай яшаш жойи топа олмасдан ўлим содир бўлади.

11. Индивидуал ривожланиш даврида ҳар бир орган жойлашувининг ўзига хос қонуниятлари бор ва шу қонуният асосида жойлашади. Бу жараёнлар генларнинг координацион, органларнинг индукцион таъсири орқали бошқарилади [5, 10].

12. Бирламчи орғизлилар ва иккиламчи орғизлилар иккита, ҳар хил ривожланиш усулига эга. Бирламчи орғизлиларда дастлаб оғиз, иккиламчи орғизлиларда дастлаб анус, кейин оғиз ҳосил бўлади.

13. Ривожланиш цикл жинсий хужайралар етилишини бошланишидан бошланиб, индивид жинсий вояга етиб жинсий хужайра етиштиришини бошланишигача давом этади. Қарилик ва ўлим онтогенезга тааллуқли даврларлар ҳисобланади [7, 14].

Содда вольвокслар ривожланиш циклида юксак ҳайвонларга хос бўлган айрим хусусиятлар ҳам учрайди. Вольвоксларнинг икки тип хужайралари ўртасида вазибалар тақсимланган. Шунинг учун ҳам, амёбалардан фарқ қилиб, вольвоксларда ўлим онтогенезнинг генетик жиҳатдан тартибга солинган охириги босқичи ҳисобланади. Бу ҳодисалар эволюция жараёнида кўп хужайралиларда такомиллашиб, кўпайишнинг янада мураккаб усуллари пайдо бўлишига олиб келган.

Шундай қилиб, ривожланиш цикл ана шу принциплар асосида ўрганилса, олинган маълумотлардан назарий ва амалий хулосалар чиқариш ва улардан амалиётда фойдаланиш имкониятини бериши мумкин.

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QONDA XOLESTERIN MIQDORINI BIOKIMYOVIY ANALIZATORDA ANIQLASH

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KALIT SO'ZLAR

Biokimyoviy analizator, shpires, paxta, probirka, dazatrlar, xolestirinni aniqlash uchun reagentlar to'plami, lipoproteinlar,

ANNOTATSIYA

Hozirgi kunda odamlarda noto'g'ri ovqatlanishdan kelib chiqayotgan xolesterin bilan bog'liq kasalliklarni uchratib kelmoqdamiz. Hozirgi zamonaviy tibbiyotda bu kasallikni tekshirish, davolash va oldini olish kabi qulay usullar ishlab chiqilmoqda. Qonda xolesterin miqdorining ko'payishi asosan noto'g'ri ovqatlanish oqibatida kelib chiqadi. turli xil kasalliklarni kelib chiqishiga sabab bo'ladi.

Xolesterin, xolesterol - sterinlar guruhiga mansub modda. Birinchi marta o't toshidan ajratib olingan. Suvda erimaydi, organik erituvchilarda yaxshi eriydi, rangsiz kristall. Xolesterin barcha tirik organizmlarda uchraydi; Xolesterining ko'p qismi nerv hamda yog' to'qimalarida, tuxum va sperma hujayralarida, jigarda (Xolesterin biosintez qilinadi), buyrak usti bezlarida va boshqalarda bo'ladi. Qon plazmasida xolesterin yuqori yog' kislotalari (olein kislota) bilan birga murakkab efir holida uchraydi. Organizmda xolesterin buyrak usti bezlari gormonlari, o't kislotalar, D vitamini va boshqa almashinuvida qatnashadi. Odam qonida o'rtacha 150–200 mg% xolesterin bo'ladi. Ko'proq yog'li ovqat iste'mol qiladigan kishilarda xolesterin miqdori ko'payadi, bu o't toshlari hosil bo'lishiga, qon tomirlari devorida xolesterin

to'planishiga va moddalar almashinuvinin buzilishi va boshqalarga olib keladi.

Tavsifi: Xolesterin qonning eng muhim tarkibiy qismi hisoblanadi, chunki u organizmning ko'plab biologik va kimyoviy jarayonlarida ishtirok etadi va bu birikmasiz insonning normal yashashi mumkin emas. Uning ko'p qismi jigar hujayralari tomonidan sintezlanadi; bu jarayonda ichak, buyrak usti bezlari va boshqa organlar ham ishtirok etadi. Bundan tashqari, inson tanasida mavjud bo'lgan xolesterin miqdorining taxminan 20% har kuni iste'mol qilingan ovqatdan olinishi kerak. Biokimyoda ushbu kimyoviy birikmani qabul qilingan tasnifga muvofiq xolesterol deb atash odatiy holdir. Ushbu komponent ko'p biosintez reaksiyalarini amalga oshirishda ishtirok etadigan asosiy birikmalardan biridir.



Barcha organlarning normal ishlashi uchun zarur bo'lgan ortiqcha xolesterin jigarda va ba'zi boshqa organlarda ishlab chiqariladi. Ushbu moddaning oz qismi iste'mol qilingan oziq-ovqatning bir qismi sifatida tanaga kiradi.

Tashqi tomondan kiradigan lipofil spirt endogen, jigarda va boshqa ba'zi organlarda sintezlangan, ekzogen deb ataladi.

Inson tanasi o'zi uchun zarur bo'lgan lipofil spirtning 80 foizini mustaqil ravishda ishlab chiqaradi va atigi 20 foizi tashqi muhitdan oziq-ovqat bilan keladi. Kimyoviy birikma deyarli suvda erimaydi, ammo u yog'larda yaxshi eriydi.

Barcha sintez reaksiyalari silliq endoplazmatik retikulumda amalga oshiriladi. Ushbu jarayon steroid tabiatdagi boshqa biologik faol moddalarning keyingi shakllanishi uchun zamin yaratadi.

Odamlarda erkin xolesterin alkogol molekulalari va transportyor oqsillaridan tashkil topgan komplekslarning bir qismidir. Bunday komplekslarga lipoproteinlar deyiladi.

Xolesterin turlari:

Kam zichlikli lipoprotein (LDL) xolesterin : qon oqimida juda ko'p LDL ("yomon") xolesterin mavjud bo'lganda, bu sizning arteriyalaringizni sindirib tashlashi va yurak xuruji yoki qon tomir uchun xavf tug'dirishi mumkin. U tanadan tabiiy ravishda ishlab chiqariladi, lekin sizning ota-onangizdan, hatto buvingiz va bobo-nabiralaringizdan ham meros qilib olinadi va sizni juda ko'p narsalarga olib kelishi mumkin. To'yingan yog', trans yog'lar va xolesterolni yuqori darajada iste'mol qilish LDL darajasini oshiradi.

Yuqori zichlikli lipoprotein (HLL) xolesterin : Yuqori HDL ("yaxshi") xolesterin sizning tomirlaringizdagi ortiqcha plakkani olib tashlaydi, uning birikmasini sekinlashtiradi va yurak xurujidan himoya qiladi. Ammo, past darajadagi xavf sizning riskingizni oshirishi mumkin. Sizning HDL raqamingiz qanchalik yuqori bo'lsa, yurak xastaligi rivojlanishi yoki yurak xurujiga duchor bo'lish xavfi past bo'ladi.

Triglitsyeridlar: Qonda aylanadigan organizmda yog' hosil bo'lishi. Oliy triglitsyeridlar, ayniqsa, ayollarda koroner yurak kasalliklari xavfini oshirishi mumkin.

Kasallikning kelib chiqish sabablari:

Asosan, yuqori xolesterin sabablari bizning turmush tarzimizda yashiringan.

Noto'g'ri ovqatlanish asosiy aybdor. Xolesteringa boy ovqatlar ko'p, ular qon darajasiga unchalik ta'sir qilmaydi. Ularda yaxshi xolesterin - HDL mavjud. Biz uchun xavf to'yingan yog'lar ko'p bo'lgan ovqatlar bilan ifodalanadi - un, yog'li go'sht va pishloq, shokolad, mayonez, chiplar, hamma fastfud. Ular yomon xolesterin - LDL to'planishiga olib keladi.

O'tirgan turmush tarzi bu kasallikning rivojlanishiga yordam beradi. Kompyuter monitorining oldiga ofisga yuklaganimizdan so'ng, biz juda oz harakat qilamiz. Shu sababli ortiqcha vazn paydo bo'ladi - xolesterolni ko'tarishning yana bir sababi. Tamaki va spirtli ichimliklar ham bunga hissa qo'shadi.

Bu kasallikning rivojlanishiga moyil bo'lgan omillar - irsiyat, jins (erkaklar bu kasallikdan ko'proq azob chekishadi) va yosh - yoshi ulg'aygan sari xolesterin



miqdorini aniqlash imkoniyati shuncha yuqori bo'ladi.

Organizmida xolesterinning ko'payishi natijasida kelib chiqadigan kasalliklar:

Qonda past va juda past zichlikdagi lipoproteinlarning yuqori darajasi tomirlarning aterosklerotik o'zgarishiga olib keladi, bu esa o'z navbatida jiddiy kasalliklar va asoratlarni rivojlanish xavfini sezilarli darajada oshiradi: gipertoniya, koroner yurak kasalligi, miokard infarkti, yo'q qiluvchi endarterit.

Qonda xolesterin miqdorini biokimyoviy analizatorda aniqlash

Kerakli jihozlar va reagentlar:

Biokimyoviy analizator, shpires, paxta, probirka, dazatrlar, xolestirinni aniqlash uchun reagentlar to'plami.

Ishni bajarish tartibi:

1.Uchta probirka olib, birinchi probirkaga blank, ikkinchi probirkaga standart, uchunchi probirkaga abrazis deb nomlanadi. Har bir probirkaga 1 mldan regain-R1 dan solinadi. Birinchi probirkaga blankga 10 mkr/l distirlangan suv solinadi.

2.Ikkinchi probirka standartga – 10 mkr/l standart eritmasidan solinadi.

3.Uchunchi probirkaga -10 mkr/l qon na'munasidan solinadi.

Har 3 ta probirka ham biokimyoviy analizatorda 10 minut 37 gradusda inkubatsa qilinadi. 10 minutdan so'ng biokimyoviy analizatorda blank, standart, obrazesga ketma-ket qo'yiladi.

Natijada: qonda xolesterin miqdori 10 minutdan so'ng ko'rsatiladi. Qonda xolesterin miqdori normada 3-5 ml/lda bo'ladi.

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ҚАНДЛИ ДИАБЕТ БИЛАН ОҒРИГАН БЕМОРЛАРДА ФУРНЬЕ ГАНГРЕНАСИНИ КЕЧИШИ

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KALIT SO'ZLAR

перинеум, перианал
соҳа, стационар
шароит, йирингли
касалликлар, прогнози.

ANNOTATSIYA

Ушбу мақолада қандли диабет билан оғриган беморларда Фурнье гангренасини кечиши ҳақида маълумот ва хулосалар берилган.

Кириш. Фурнье гангренасини кам учрайдиган касалликлардан бири бўлиб, бу касаллик тўлиқ ўрганилмаган хисобланиб, ҳозирги кунда қандли диабет билан оғриган беморларда Фурнье гангренасини кечишини аниқлаш борасида тадқиқотлар олиб борилмоқда. Бугунги кунда кўплаб мамлакатларда хусусан АҚШ да Миллий биотехнология ахборот маркази 400 га яқин Фурнье гангренаси ҳақидаги маълумотларни chop этган.

Замонавий тушунчаларга кўра, Фурнье гангренаси тез ривожланаётган полимикробиял етиологиянинг некротизан фасиит шаклларида бири бўлиб, ташқи жинсий аъзолар, перинеум ва перианал минтақанинг бирламчи шикастланиши билан бирга келади. Бу шошилинич диагностика ва терапевтик чораларни талаб қиладиган ўткир жарроҳлик касаллиги

чисобланади. қандли диабет билан оғриган беморларда Фурнье гангренасининг прогнози биринчи навбатда тиббий ёрдам кўрсатиш вақти билан белгиланиб, бази ҳолатларда терапевтик тадбирларнинг бир неча соатга кечикиши септик шокнинг ривожланиши туфайли юқори ўлим (25% ёки ундан кўп) билан бирга келади. Фурнье гангренасида ёши, иқлимий ёки географик чекловлари йўқ бўлиб, бази давлатларда касалланиш йилига 900-1000 ҳолатни, асосан, ижтимоий фаол ёшдаги (50-55 ёш) еркакларда учраши аниқланган.

Тадқиқотлардан мақсад: Сурхондарё вилоятида 35 - 80 ёшгача бўлган қандли диабет билан оғриган беморларда Фурнье гангренасини кечишини таҳлил қилиш.

Муаммонинг долзарблиги: Фурнье гангренаси қандли диабет



билан оғриган беморларда оғир кечиши билан бирга улар ортасида ўлим кўрсаткичи бирмунча юқори хисобланади. Соғлиқни сақлаш маълумотларига кўра кейинги 10 йилликда аҳоли орасида бу касаллик билан касалланиш 2.2 - 6.4 бараварга ошганлиги маълум қилинди. Тадқиқотчилар олиб бориغان тадқиқотларида Фурнье гангренази билан асосан эркаклар касалланишини, бази ҳолатларда бу касаллик билан аёллар ҳам касалланганликларини аниқлашган. Фурнье гангренази қандли диабет билан оғриган беморларда касаллик асосан 35-80 ёшдаги одамларда учрайди. Бу касалликда даволаш самарадорлиги паст бўлиб, тиббий манбаларда ўлим кўрсаткичи (35-74%) ни ташкил этгани қайд қилинган. Фурнье гангренази билан оғриган беморлар шифохонада узоқ вақт даволанишларини талаб қилади. Шу сабабдан тадқиқотимизни қандли диабет билан оғриган беморларда Фурнье гангреназини кечишини ўрганишга қаратдик.

Материал ва текширув усуллари: Кузатишлар олиб борилганда 2020-2021 йилларда 8 та бемор вилоят кўп тармоқли тиббиёт марказида стационар даволанишда бўлди. Уларнинг орасида эркаклар 7 (87.5%), 1(12.5%) аёллар.Шундан:20-40 ёшгача бўлган эркаклар 1(12.5%) ни, 40-70 ёшгача бўлган эркаклар 5 (62.5 %) ни, 20-40 ёшгача бўлган аёллар 1(12.5%) ни, 40-70 ёшгача аёллар 1 (12.5%) ни ташкил этди. Фурнье гангреназини диагностика қилишда

беморларнинг шикояти, анамнези, объектив кўрик натижаларидан фойдаланилди. Беморларда Фурнье гангреназида перианал, ташқи жинсий аъзолар, чов соҳалари тери, тери ости ёғ қавати ва фасцияларни некрозга учрагани аниқланди. Фурнье гангренази билан оғриган беморлар таҳлил қилинганда 5 (62.5%) та бемор қандли диабет билан оғриганлиги аниқланди. Шифохонага мурожаат қилиб стационар шароитда даволанган беморлардан 4 (50%) тасида ўлим ҳолати қайд этилди. Беморларни 4 (50%) таси тузалди. Қандли диабет билан оғриган беморларда Фурнье гангреназида жароҳатда деструктив ўзгаришлар тез кечиши ва интоксикацияни кучли бўлганлиги аниқланди. Беморларда 7(87.5%) ҳолатда перианал соҳанинг йирингли касалликлари ва жароҳатлари натажасида Фурнье гангренази келиб чиққанлиги аниқланди.

Хулоса. Тиббий манбаларда бу касаллик қандли диабет,спиртли ичимлик истеъмол қилувчилар ва иммун системаси паст беморларда кўп учраши айтилган. Кузатишда Фурнье гангренази қандли диабет билан оғриган беморларда, 40-70 ёш оралиғида 6 (75 %) энг кўп учраши аниқланди. Хулоса қилиб шуни айтиш мумкин, касалликни эрта аниқлаш, актив хирургик тактика йиринг - некротик зонада радикал жарроҳлик амалиётини бажариш,метаболик бузилишларни вақтида даволаш касалликда ўлим кўрсаткичинини камайтиради.



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SHO'RLANGAN TUPROQLARDA JO'XORINING AHAMIYATI

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KALIT SO'ZLAR

*Sho'rga chidamli
o'simliklar, havo ildizlar,
ildiz bachkilari, pestitsid,
ro'vak, so'ta,*

ANNOTATSIYA

*Sho'rlangan tuproqlarda o'suvchi o'simliklarni
aniqlash va ularning vegetatsiya davridagi o'zgarishlari
haqida ma'lumotlar keltirilgan.*

O'zbekiston tuproqlari orasida sho'rlangan tuproqlar mavjud. Sho'rlanish darajalari yuqori bo'lgan tuproqlardan foydalanishda, bu tuproqqa mos o'simliklarni tanlab ekishimiz lozim. Bu vaqta avallambor o'simlikni ekishdan oldin kerakli tuproqni tayyorlab olish ishlarini amalga oshiriladi. O'g'it ishlatishdan oldin bu tuproqlarning sho'ri yuviladi. O'suv davrida o'simliklar ancha miqdorda makroelementlarni (100-300 kg/ga) va kam miqdorda (bir gektarga grammlar hisobida) mikroelementlarni talab qiladi. Mikroelementlar tuproqdagi fosfor va kaliyni o'zlashtirishga yordam beradi. Bug'doy, arpa, makkajo'xori, ko'k no'xat fosforga talabchan bo'ladi. Bu ekin uchun tuproqning fosfor bilan eng kam maqbul taminlanish darajasi 120-150 mg/kg.

Texnologik tadbirlar bilan (ohaklash, gipslash, sho'r yuvish) tuproqning muhiti o'zgartiriladi. Tuproq muhitini

neytrallashtirish. Tuproqlarning muhiti pH-7 dan ortiq bo'lganda sho'ri yuviladi. Sho'rlanish darajasiga qarab tuproq kuzqish faslida bir necha marta yuviladi. Tuproq muhiti nordon (pH 4-5) bo'lganda ohaklanadi. Dala ekinlarining aksariyatiga neytral muhit talab qilinadi. Tuproqqa solinadigan ohak unsimon bo'lishi kerak va yerga bir tekisda solinishi lozim. Ohak yerga solingandan keyin diskalanadi, bu tadbirda ohak tuproq bilan aralashadi, so'ngra yer haydaladi, kultivatsiya qilinadi. Muzlagan yerga ohak solinmaydi.

Bulardan tashqari, ruhsat etilgan pestitsidlardan foydalansa ham bo'ladi. Makkajo'xori uchun ambush, karsar, bazudin, voloton, xlorofos, tigam, fentiuram, agelon, bazagran va boshqalarni qo'llash mumkin. Jo'xorida esa TMTD, fentiuram, atrazin, 2,4 tipidagi amin tuzlari, propazin, reglon kabilarning ishlatilishi ma'qulroq



Sho'rlangan tuproqlarda jo'xori, sudan o'ti va bedani aralash ekish ma'quldir. Makkajo'xori, jo'xori, soya, sudan o'ti, beda kabi ekinlarning xo'jalik jihatdan yaroqliligini baholashda ularni aralash ekilgan maydonlarda yuqori hosildorlik hamda har gektar hisobiga yig'ib olinadigan oqsil eng ko'p bo'lgan muddatlarini tanlab olish muhimdir.

2015 yili mamlakatimizda donli ekinlar suvli yerlarda 1 mln. 285 ming gektar, lalmi yerlarda 250 ming gektarga ekilgan. Don ekinlari morfologik, biologik

belgilarga qarab bir necha guruhlariga bo'linadi. Tariqsimon ekinlar guruhda Poaseae oilasiga mansub ekinlar: makkajo'xori, jo'xori (oqjo'xori) sholi, tariq va Polygonaseae oilasiga mansub marjumak ekini kiradi. Bu ekinlarning belgilari: donida uzunasiga ketgan egatcha bo'lmaydi, bittadan boshlang'ich ildiz rivojlanadi, gul to'plami ro'vak yoki so'ta. Ekiladigan navlari bahorgi, issiqsevar, qisqa kun o'simligi va qurg'oqchilikka chidamli (sholidan boshqasi) bo'ladi.

Keng qatorlab	45-60	makkajo'xori, jo'xori.
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Ayrim ekinlarnng ekish me'yorlari

Ekinlar	Ekish me'yor, mln. dona urug'/ga
Makkajo'xori, jo'xori	0,20-0,25

Baland bo'yli don ekinlarida (makkajo'xori, jo'xori) poyaning yer ustidagi bo'g'inlaridan havo (tayanch) ildizlari o'sib chiqadi. Bu ildizlar o'simlikni tik o'sishiga va yotib qolmasligiga yordam beradi. Makkajo'xorining ildiz tizimi esa o'simlik boy tarvaqaylab ketgan ingichka ildiz tizimiga ega. Optimal sharoitlarda umumiy ildiz uzunligi, ildiz tuklarini hisobga olmaganda 1.5m ga yetishi mumkin. Agar ildiz o'sishi cheklanmagan bo'lsa, ildiz tizimi katta yoshli o'simlik taxminan 1,5 m ga yon tomonga va taxminan 2,0 m gacha yoki undan ham chuqurroq o'sadi. Doimiy ildiz tizimida qo'shimcha va tayanch ildizlar mavjud, tasodifiy ildizlar quyida joylashgan tugunlardan ildizlarning tojida rivojlanadi. Tuproq yuzasida odatda to'rtidan oltitagacha tasodifiy ildizlari chiziq shaklida hosil bo'ladi. To'qmoqli tayanchdan chiqqan ildizlari havo tugunlari bo'lib, bu ildizlar nisbatan qalin, pigmentli va mumsimon modda bilan

qoplangan. Yordamchi ildizlar ikki tomonlama funktsiyasini bajaradi o'simliklarga tayanch va ozuqa moddalarini o'zlashtirish, yosh o'simliklarda ko'plab ildiz tuklari topiladi. Ildiz tukchalari tuproqqa kirib ildizlarning yuzasini oshiradi, suv va ozuqa moddalarining so'rilishida muhim rol o'ynaydi.

Don ekinlarining poyasi somon poya bo'lib, ichi kavak yoki g'ovak, o'zak bilan to'lgan bo'ladi. Poya bo'g'inlar bilan bo'g'in oraliqlariga bo'lingan. Past bo'yli o'simliklarda 5-7 ta bug'in bo'ladi. Makkajo'xori bilan jo'xorida 10 tadan 25 tagacha bo'ladi. Pastdan yuqoriga qarab bo'g'in oraliqlari uzayadi. Poya shoxlaydi. Yon shoxlari yer osti bug'inidan yoki yer ustidagi bug'inlardan rivojlanadi. Poyaning o'rta qismi yo'g'on bo'ladi, yuqori qismi ingichka bo'ladi.

Ro'vak - suli, jo'xori, sholi, tariq, makkajo'xori. So'ta - makkajo'xorining onalik gulto'plami. Makkajo'xori bir uyli



ayrim jinsli o'simlikdir. Onalik gullari so'taga to'plangan, otalik gullari ro'vakka

to'plangan.

Donning kimyoviy tarkibi (quruq vazniga nisbatan,%)

No	O'simlik	Oqsil	Uglevod	Yog'	Kul	Kletchatka
1	Makkajo'xori	11,6	78,9	5,3	1,5	2,6

Don ekinlarining bargi oddiy bo'lib, barg shapalog'i, qin, tilcha va quloqchalardan iborat. Barg poya bo'g'inidan o'sib chiqib poyani qattiq o'rab uni baquvvat qilib tik ushlab turadi. Barg qinining barg shapalog'iga aylanadigan joyida tilcha va quloqchalar bo'ladi. Tilcha yog'in suvlarini barg qini va poya orasiga o'tkazmaydi. Tilcha poyaga o'ralib bargni mustahkam joylashishiga yordam beradi.

Don yumaloq (tariq, jo'xori), noto'g'ri shaklda (makkajo'xori) bo'ladi. Don ekinlari urug'larining bo'rtishi va ko'karib chiqishi uchun talab qilinadigan suv miqdori har xil bo'ladi: makkajo'xori 37-44%, tariq va jo'xori 25-38% (urug' vazniga nisbatan).

Don ekinlari juda past haroratda ham ko'karib chiqa oladi, makkajo'xori va tariq uchun 8-10 oC, jo'xori va sholi uchun 10-12 oC. Chetdan changlanadigan o'simliklar: javdar, makkajo'xori va jo'xori. Chetdan changlanadigan o'simliklarda gul qobiqlari ochiq bo'ladi, chang shamol yordamida tarqaladi. Makkajo'xori ro'vagi so'taga qaraganda 2 kun oldin gullaydi. Gul changi shamol yordamida so'taning ochiq tumshuqchalariga tushadi. Changlar so'ta iplarining tumshuqchalariga uchib yetib, urg'ochi gulning tugunchasiga tushadi va

uni urug'lantiradi. Makkajo'xorini sun'iy changlatib hosilni oshirish mumkin. Boshqni o'rta qismida yirik don rivojlanadi. Ro'vakli don ekinlardan (suli, sholi, tariq, jo'xori) gullash ro'vakning uchki qismidan boshlanadi, shuning uchun bu qismdagi don yaxshi rivojlangan bo'ladi. Urug'chilikda buni e'tiborga olish kerak. Bahorgi don ekinlari (bug'doy, arpa, sul, javdar, makkajo'xori, jo'xori, sholi, tariq) bahorda ekiladi va shu yilning yozida, kuzida hosil yetiladi.

Jo'xori o'rilgandan so'ng, yangi bachki (qo'shimcha) poyalar hosil qilish xususiyatiga ega, shu sababli uni bir yilda ikki, ba'zan uch martagacha o'rib olish mumkin. Lekin, jo'xori erta o'rilganda va tuproqda nam yetishmagan vaqtida o'zining poyasi va barglarida sinil kislotasini hosil qilish xususiyatiga ega. Bunday ko'k poya bilan boqilgan mol zaharlanishi mumkin. Shuning uchun jo'xori erta o'rilganda, uni biroz so'litib yoki quritib molga berish ker. Jo'xori ko'kligicha molga yedirish uchun ekilgan bo'lsa, uni o'rib olingandan so'ng gektariga 60-90 kg azot berilib, so'ngra sug'oriladi. Buning natijasida jo'xorining qayta o'sishi tezlashadi.



Xulosa. Jo'xorining donidan spirt va kraxmal olinadi. Qandli navlarining poyasidan shinni (qiyom), supurgisimon navlaridan esa xo'jalik supurgisi va har xil shyotkalar tayyorlanadi. Qandli navlarining poyasi tarkibida 10-12% qamish shakari va 1,2-2,0% glyukoza bo'ladi.

Bu navlardan olingan shinni (qiyom)

konserva sanoatida ishlatiladi. Nihoyat, jo'xori agrotexnik ahamiyatiga ham ega, u qurg'oqchilikka, tuproq sho'riga chidamli o'simlik hisoblanadi. Uni takroriy ekin sifatida ekish mumkin, chopiqtalab o'simlik bo'lganligi uchun boshqa ekinlar bilan almashlab ekish mumkin.

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БИОТЕХНОЛОГИЯ ПЛОДРОДИЯ ПОЧВЫ

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КЛЮЧЕВЫЕ СЛОВА

почва, плодородие, гумус,
компост, сельское-
хозяйства, хлорелла,
кукуруза, хлопчатник,
пшеница.

АННОТАЦИЯ

В статье приведены сведения о минеральных удобрениях, изменении качества растений, применении новых агротехнических и биотехнологических методов в обеспечении населения качественными продуктами питания, на которое влияет снижение плодородия почв.

В последующие годы в нашей стране происходят изменения в сельском хозяйстве. Как и во всех сферах, в развитии сельского хозяйства нашей республики проводятся радикальные реформы.

Обеспечение населения качественными и безопасными продуктами питания является одной из глобальных проблем современности. В условиях развития науки и техники и роста потребности населения в продуктах питания увеличение производства искусственных пищевых продуктов неизбежно окажет негативное влияние на здоровье человека. Что, в свою очередь, возлагает большую ответственность на сельскохозяйственных сотрудников и учёных в этой области. Использование различных химикатов для защиты растения, например как акарицидов и

инсектицидов, которые остаются в почве долгое время, действует на химический состав почвы. Акарицидные препараты для растений – это специальные средства биологического или химического типа, предназначенные для уничтожения паутиных и других видов клещей. Они отличаются по механизму действия, составу и свойствам. Поэтому подбирая акарицидные средства для борьбы с клещами в саду, на огороде, на поле, винограднике или помещении необходимо учитывать разницу и целевое назначение препарата.

Агротехника выращивания любого растения начинается с почвы и его плодородия. Плодородие почвы зависит от физико-химических свойств, гумусового слоя, содержащихся в ней органических минералов и особенно от набора, количества и биогенной



активности различных полезных микроорганизмов.

Органические и неорганические вещества, присутствующие в почве, особенно распределение, разнообразие и ферментативная активность микроорганизмов, очень важны и имеют решающее значение для роста, развития и продуктивного производства растений. Поэтому одной из важнейших и неотложных задач является освоение в стране пашни, качественного состава почв, методов изучения и управления химическими и биологическими, особенно микробиологическими процессами, улучшение структуры почв, повышение продуктивности таких задач, как решение.

Экономическое положение страны определяет благосостояние народа. Президент страны назвал нашу Республику аграрной зоной, экономическое развитие Узбекистана, как аграрной Республики во многом зависит от сельскохозяйственного производства, высокой урожайности посевных площадей на которых культивируются стратегически важные культуры, такие как хлопчатник, пшеница кукуруза, подсолнечник. биотехнологический подход к почвенной агротехнике – требование современности.

Биотехнология обогащения почвы органикой это дело не хитрое, органические удобрения содержат все необходимые растению микроэлементы. Навоз и компосты, изготовленные из сельскохозяйственных и сточных вод, а также лигнин, стебли хлопчатника и

промежуточные культуры составляют основу органических удобрений.

Трудно переоценить роль органических удобрений в повышении эффективности минеральных удобрений и плодородия почвы, а также в получении обильных и высококачественных урожаев. Органические удобрения включают навоз, джиджу, торф, птичий помет, различные компосты и удобрения из зелени.

Удобрение из зелени, здесь мы хотим отметить Хлореллу (*Chlorella vulgaris*), которого можно при лабораторных условиях искусственно приготовить, это одноклеточное сине - зелёная водоросль, которого очень эффективно используют при обогащении почв. Органические удобрения содержат азот, фосфор, калий, кальций и другие элементы, необходимые для питания растений, а также органические вещества, благоприятно влияют на свойства почвы. Если обратить внимание на цифры, то в одной тонне навоза находятся 5 кг азота, 2,5 кг ангидрида фосфата, 6 кг оксида калия. Это говорит о том, что бы обеспечить потребность почвы в минералах надо на каждый гектар использовать от 20 т до 40 т навоза.

Если объяснить с научной точки зрения состав органического удобрения, то нами было выяснено в лабораторных условиях, в составе навоза имеются элементы, которые благотворно влияют на состав почвы и развития растений. Навоз которого мы исследовали это был перегной фекалия большого, малого рогатого скота и останки растений. При использовании



фикалия птиц надо быть осторожным, так как в его составе соли азота больше чем в составе фикалия скота.

Представляемая нами практическая работа может показаться на первый взгляд старой и устаревшей, но

использование водорослей и мицелия грибов для улучшения состава почвы является новой биотехнологической мерой.

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ЭФИР МОЙЛИ ЎСИМЛИКЛАРНИНГ БИОЛОГИК ХУСУСИЯТЛАРИ ВА ХАЛҚ ХЎЖАЛИГИДАГИ АҲАМИЯТИ

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KALIT SO'ZLAR

арпабодиён, оқ зира,
кашнич, қора зира,
тоғрайхон, кийик ўт,
лимон ўт, тоғжамбул,
ялпиз, карбон сувлари,
спирт, эфирлар,
органик кислоталар

ANNOTATSIYA

мақолада эфир мойли экинлардан арпабодиён, оқ зира, кашнич, қора зира, тоғрайхон, кийик ўт, лимон ўт, тоғжамбул, ялпиз каби эфир мойли ўсимликларнинг биологик ва экологик хусусиятлари, халқ хўжалигида, халқ табобатида ва тиббиётда ишлатилиши тўғрисидаги маълумотлар келтирилган.

Эфир мойларининг асосий манбаи эфир мойли ўсимликлардир. Ер юзиде тарқалган барча ўсимликлар 300 оилага мансуб бўлиб, уларнинг 87 оиласига кирувчи турларида эфир мойлари борлиги аниқланган. Ҳозирги вақтда 2500 ўсимлик турларида эфир мойларининг сақланиши ўрганилган бўлиб, улардан 77 оилага кирувчи 1100 дан ортиқ тури МДХ флорасида учрайди. Эфир мойлари ўсимликнинг маълум ҳужайра ва тўқималардаги махсус бўшлиқларда ҳамда каналчаларда тўпланади. Бундан ташқари ҳужайра ширасида эмульсия ҳолатида ва паренхима ҳужайраларида учрайди. Ўсимликнинг ўсиши, ривожланиши ва тарқалган шароитига

қараб, ундаги эфир мойларининг миқдори ўзгариб туради.

Эфир мойлари ўсимликларнинг уруғ ва меваларида, гул ва баргларида, поя ҳамда илдизларида бўлади. Эфир мойлари ўз кимёвий таркибининг мураккаблиги, учувчанлиги ва хушбўй бўлиши билан ўсимлик мойларидан фарқ қилади. Агар эфир мойлари қоғоз ёки материалга теккизилса, унда ҳеч қандай доғ қолдирмайди.

Эфир мойлари кўпчилик ўсимликларда эркин ҳолда бўлиб, сув буғи ёрдамида ҳайдаб олиш ёки экстракция усули билан улардан ажратиш олинади. Баъзи ўсимликларда эфир мойлари глюкозидлар ва бошқа моддалар билан бириккан ҳолда бўлади.



Уларни соф ҳолда ажратиб олиш учун ферментация усулидан фойдаланилади.

Эфир мойли экинларнинг уруғида, мевасида, баргида, поясида хушбуй моддалар - эфир мойлари мавжуд. Уларнинг миқдори 0,1-6,7% атрофида бўлади. Эфир мойлар таркибида ҳар хил органик моддалар (карбон сувлари, спирт, эфирлар, органик кислоталар ва ҳ.) мавжуд. Эфир мойли экинлар аксарият ҳолда *Apiaceae* оиласига мансуб.

Арпабодиён. Арпабодиён (анис) *Pimpinella anisum* L. турига, зиradoшлар *Apiaceae* оиласига мансуб бир йиллик экин. Илдизи ўқ илдиз, ингичка, яхши ривожланган. Пояси ўтсимон, баландлиги 25-60 см, тик ўсади, юқорги қисми шохланади. Барги уч хил бўлади. Пастки барглари бандли, бутун, думалоқ, буйраксимон, кам кертилган, четлари тишчали. Ўрта барглари узун бандли, уч қўшалоқ, барглари панжасимон қийилган. Юқорги барглари бандсиз, 3-5 бўлакли. Гултўплами мураккаб соябон, гуллари оқ рангли. Меваси тухумсимон, ноксимон, узунлиги 3-4 мм, иккита бир уруғли пишганда чатнамайдиган мевачалардан иборат. Меванинг юзасида узунасига кетган ўнта қовурғаси бўлади. Эгатчаларда эфир мойлар кўп бўлади, ранги кўк-яшил бўлади.

Оқ зира. Оқ зира (фенхель) - *Foeniculum vulgare* L. турига, зиradoшлар *Apiaceae* оиласига мансуб кўп йиллик ўсимлик. Илдизи ўқ илдиз, яхши ривожланган. Пояси тик ўсади, сершоҳли, баландлиги 1-2 м бўлади.

Барги кетма-кет жойлашади, кучли кертилган бўлаклари ингичка, барглари ранги кўк-яшил. Гултўплами мураккаб соябон, гул ранги сариқ бўлади. Меваси халтасимон, иккита бир уруғли мевачадан иборат. Мева юзасида ўнта узун қовурғаси бўлади.

Кашнич. Кашнич (кориандр) - *Coriandrum sativum* L. турига, зиradoшлар *Apiaceae* оиласига мансуб бир йиллик ўсимлик. Илдизи ўқ илдиз, яхши ривожланган, ингичка, урчиқсимон. Пояси сершоҳли, тик ўсади, баландлиги 30-120 см бўлади, туксиз, найсимон, қиррали, антоциан доғлари бўлади. Барги - ҳар хил шаклда, ўзига хос ҳидга эга. Пастки барглари бандли, патсимон, патсимон-кертилган, ўртадаги барглари икки баробар патсимон, юқорги барглари ингичка бўлакларга қийилган. Ўрта ва юқорги барглари бандсиз бўлади. Гултўплам мураккаб соябон. Оддий соябонаар асосида барглари ўралган бўлиб, 3-5 та барглари бўлади. Мураккаб соябонда барг ўралмалари йўқ. Гуллари майда оқ, пушти, оч сариқ, оч бинафша рангли. Гули бештали, тугунчаси икки уяли, хашаротлар ёрдамида четдан чингланади. Меваси икки уруғли, шарсимон, чузинчоқ, бир уруғли, пишганда чатнамайдиган иккита мевачалардан иборат. Эфир мойи мевачаларнинг ички томонида махсус эгатчаларда тўпланади. Пишганда мевалар тўкилади. 1000 дона меванинг вазни 7-10 г. Мева таркибида 0,2-1,4% эфир ва 16-28% мой бўлади.

Қора зира. Қора зира (тмин) *Carum carvi* турига, зиradoшлар *Apiaceae* оиласига мансуб икки йиллик



ўсимлик. Илдизи ўқ илдиз, яхши ривожланган. Пояси тик ўсади, баландлиги 1-1,5 м бўлади, сершохла, ичи ковак, туксиз. Барги кучли қийилган, патсимон кертилган. Гултўплами мураккаб соябон, асосида ингичка ён гули бўлади, ранги оқ, узун бандли. Меваси ясси, жигар рангли, иккита бир уруғли мевачалардан иборат. Мева юзасида узунасига кетган ўнта қовурғаси бор. Ранги сариқ-сомон рангли. Қовурғалари орасида эфир мойи жойлашади.

Тоғрайҳон. Тоғрайҳон лабгулдошлар оиласига мансуб бўлиб, кўп йиллик ўт ўсимликдир. Унинг бўйи 30-85 см келади. Республикамиз флорасида униинг бир қанча тури учрайди. Тоғрайҳон Ўзбекистоннинг тоғли районларининг майда шағалли, чириндига бой бўлган қўнғир ва қоратупроқли ерларида ўсади. У июнь - август ойларида гуллаб, шоналайди. Сентябрьда мевалари пишади.

Тоғрайҳон шифобахш ўсимликлар қаторига киради. Медицинада унинг барги, барра новдалари ва тўпгули турли касалликларни даволашда ҳамда овқат ҳазм қилиш аъзоларининг иш фаолиятини яхшилашда ишлатилади. Тоғрайҳондан тайёрланган шарбатдан уйқусизлик, бачадон қасалликларини даволашда, сийдик ҳайдовчи восита сифатида, баданда ҳосил бўлган доғларни йўқотишда ишлатилади. Ундан олинган эфир мойини суркайдиган дори ва балзам билан аралаштириб тиш оғриғи касаллигини даволашда қўлланилади.

Тоғрайҳон хушбўй ҳидли бўлганлиги учун зиравор сифатида ҳам

ишлатилади. У турли хил консерва, маринадлар тайёрлашда, бодринг, помидор, карам ва тарвузларни тузлашда ишлатилади. Маҳаллий халқлар тоғрайҳоннинг ер устки қисмларини қуритиб, қуритилган меваларга (ўрик, олма, олчаларга) аралаштирадилар. Бу эса меваларни ҳар хил ҳашарот личинкаларининг зарарлантиришидан ва қуртлашдан сақлайди.

Тоғрайҳондан вермут, вино, квас, ва ароқларга хушбўй ҳид беришда ҳам қўллана бўлади. Эфир мойларидан ҳидли атирлар, тиш ювадиган паста, ҳидли совунлар ва сувлар ишлаб чиқаришда фойдаланилади. Бу ўсимлик ўзида кўп миқдорда эфир мойларини сақлайди.

О.Н.Кудряшев (1934, 1938) Ҳисор тоғида ўсувчи тоғрайҳонда 0,17-0,37%, Қирғиз Олатоғи ва Талас Олатоғида ўсувчи тоғрайҳонда 0,4-0,57% эфир мойлари борлигини аниқлади. А.Д.Беззубов ва Н.М.Шорниковаларнинг (1952) аниқлашича, Фарғона водийсида учрайдиган тоғрайҳоннинг уруғида 1,86%, гулида 2,11%, баргида 2,24%, поясида 0,176% эфир мойлари бор экан.

Илмий текширишлар натижасида Бўстонлиқ районининг Хумсон қишлоғида денгиз сатҳидан 1600-1700 м баландликда ўсувчи тоғрайҳоннинг гуллаш даврида унинг ер устки аъзоларида 1,5%, тўпгулида 1,8%, баргида 2,2% эфир мойлари борлиги аниқланди.

Шоҳимардон санаторийсининг атрофида тарқалган тоғрайҳон гуллаш даврининг бошларида тўп гули ва барглари 1,49%, пояси 0,066% эфир мойларини сақлайди. Эфир мойи очжигар ранг ёки



очсариқ рангли, хушбўй ҳидли бўлиб, кимёвий таркиби фенол, тимол ва карвакроллардан ташкил топган. Тоғрайҳонда эфир мойларининг асосий қисми дастлабки 20-25 минутда ажралиб чиқади. Ҳар бир гектар майдондан 100-400 кг тоғрайҳоннинг ер устки қисмларини йиғиштириб олиш мумкин.

Кийик ўт. Кийик ўт лабгулдошлар оиласига мансуб бўлиб, баландлиги 40 см. Ўзбекистонда кийик ўтнинг 7 та тури кенг тарқалган. Бу ўсимликларнинг баъзи турлари бир йиллик ва кўп йиллик ҳисобланади. Кийик ўти республикамизнинг барча тоғли районларининг адир ва тоғ зоналарининг шимолий, жанубий ён бағирларида, шағалли ва тошли, қўнғирсимон тупроқли ерларда, денгиз сатҳидан 900-2400 м баландликда ўсади. Кийик ўт июнь, июльда гуллаб, июль ойининг охирларида ва август ойининг бошларида мевалари пишади.

Кийик ўт зиравор сифатида турли хил таомлар ва салатлар тайёрлашда ишлатилади. Ундан мева ва сабзавот маҳсулотларини тузлашда ҳам фойдаланса бўлади. Кийик ўт саноатда гўшт ва балиқ консервалари, ширинликлар, вино, ликёрларни ишлаб чиқаришда фойдаланилади. Бу ўсимлик таомларга солинадиган қора мурч ва лавра баргларида ўзининг шифобахшлиги, таъми билан устун туради. Кийик ўт медицинада юрак санчиш касалига қарши қайнатилиб ичилади. Унинг барги, пояси ва тўпгуллари эфир мойларига жуда бой. Улардан атир, ҳидли совун спиртли ва спиртсиз ичимликлар ишлаб чиқаришда фойдаланиш лозим.

С.Н.Кудряшев (1934) Ҳисор тоғида (Тожикистон ССР) ўсадиган кийикўти гуллаган даврида унинг таркибида 0,4 фоиз эфир мойи борлигини аниқлаган. А.Д.Беззубов ва Н.М.Шорникова (1952) Жанубий Қирғизистонда кенг тарқалган кийик ўт гуллаган вақтида 0,854%, гулида 2%, баргида 0,67%, поясида 0,122% эфир мойи борлигини текширган.

Фарғона водийсининг Машаланг сойида денгиз сатҳидан 1800 м баландликда ўсадиган кийик ўти гуллаган даврида ундаги эфир мойининг миқдори аниқланган. Унинг ер устки қисми 0,6-1,1%, тўпгули 1,5-2,3%, пояси 0,06-0,09% эфир мойини сақлайди. Ўсимликлардан олинган эфир мойлари хушбўй ҳидли бўлиб, асосий қисмини апинен, пулегон, ментон ташкил этади. Эфир мойлари очяшил, очсариқ, жигарранг бўлади. Кийик ўтдан олинган эфир мойи очиқ ҳавода оксидланиб, рангини ўзгартиради.

Кийик ўтидаги эфир мойларининг асосий қисми дастлабки 40-50 минутда ажратиб олинади. Бу ўсимлик Бўстонлиқ райони ва Фарғона водийсида жуда кўп учрайди. Улардан халқ хўжалигида фойдаланиш зарур.

Лимон ўт. Лимон ўт лабгулдошлар оиласига мансуб бўлиб, унинг баландлиги 30-120 см. Бу ўсимлик кўп йиллик ўт бўлиб, республикамиз тоғли районларининг тоғолди ва тоғнинг ўрта минтақасида учрайди. Лимон ўт июнь, август ойларида гуллаб, июль, сентябрь ойларида пишади.

Унинг ҳиди лимон ҳидини эслатгани учун кўпинча лимонли мелисса деб юритилади. Лимон ўт зиравор ўсимлик сифатида Италияда, Скандинавия,



Англия ҳамда Шимолий Америкада катта-катта майдонларда ўстирилади. Лимон ўт бизда кам истеъмол қилинадиган зиравор ўсимликдир. У манзарали ўсимлик сифатида экилади.

Лимон ўт гуллагунгача барги ва барра навдалари ҳўл ёки қурилган ҳолда салатларга, шўрваларга, компотларга ва сутли таомларга солинади. Ундан гўшти, балиқли ва замбуруғли консервалар тайёрлашда фойдаланса ҳам бўлади. Лимон ўт спиртли ва спиртсиз ичимликлар ишлаб чиқаришда ишлатилади.

Лимон ўт медицинада организмнинг ҳаракатчанлигини оширишда, иштаҳани очишда ва ошқозон, нафас йўллари яллиғланиш касалликларини даволашда фойдаланилади. Ундан тайёрланган дори-дармонлар ошқозон ва ичакда тўпланиб қолган газларни ҳайдаб чиқаради.

Лимон ўт таркибида аччиқ ва ошловчи моддалар, органик кислоталар, минерал тузлар, витамин С ҳамда эфир мойлари бор. Унинг эфир мойларидан хушбўй совунлар, тиш ювадиган пасталар ҳамда атирлар тайёрлаш мумкин.

А.П.Қондрацкий, А.Р.Никитинский (1924) ботаника боғида ўстирилган лимон ўтда 0,06% эфир мойлари борлигини аниқлаган.

Фарғона водийсининг Машаланг сойида кенг тарқалган лимон ўт гуллаш даврида унинг барг ва тўпгулларида 0,04%, баргида 0,09% эфир мойларини сақлайди. Эфир мойларининг асосини цитраль, цитранеллаль, линалол, гераниол ташкил этади.

Лимон ўтнинг катта майдонлардаги табиий бойликлари йўқ.

У уруғдан осонлик билан кўпаяди, ер танламайди. Уни табиий ўсаётган жойларида кўпайтириш яхши натижаларни беради.

Тоғжамбул. Тоғжамбул лабгулдошлар оиласига кирувчи, баландлиги 10-30 см келадиган яримбута ўсимликдир. Республикамиз флорасида унинг 2 та тури ва бир қанча гибридли формалари мавжуд. Улар Фарғона, Тошкент ва Самарқанд областларипинг тоғли зоналарида кенг тарқалган бўлиб ажриқсимон ўсади. Тоғжамбул июнь, августда гуллаб, июль, сентябрда унинг уруғлари пишади.

Маҳаллий халқлар бу ўсимликдан қадимдан бери зиравор сифатида фойдаланиб келадилар. Тоғжамбулдан сабзавотли, гўшти, балиқли, замбуруғли консервалар тайёрлашда, шунингдек, колбасалар ишлаб чиқаришда, вермут, ликёр, ароқларга ҳамда конфет, чой, сиркаларга хушбўй ҳид беришда фойдаланиш мумкин.

Греклар тоғжамбулнинг барг ва тўпгулидан тумов, қорин оғриғи, уйқусизлик касалликларини даволашда ишлатадилар. Ҳозирги вақтда медицинада тоғжамбулдан балғам ташлатувчи, бод касаллигини даволовчи, сийдик ҳайдовчи ва иштаҳани очувчи дорилар тайёрланади. Унинг таркибида ошловчи, оқсил, бўёқ моддалари, камед, смола, ёғлар, органик кислоталар, минерал тузлар, витамин С ҳамда эфир мойлари бор. Эфир мойларидан парфюмерия - косметик товарлар ишлаб чиқарилади.

Г.А.Денисова ва К.И.Голубевалар (1960) Кўгартда ўсувчи тоғжамбул



гуллаш даврининг охирида 0,21% эфир мойини сақлашни аниқлаганлар.

Фарғона водийсининг Шуваланг доvonига яқин бўлган жойда ўсувчи тоғжамбул гуллаш даврида 0,15-0,26% эфир мойларини сақлайди. Тоғжомбулдан эфир мойларининг асосий миқдори дастлабки 20-30 минутда ажратиб олинди. Эфир мойлари хушбўй ҳидли, жигар ранг бўлиб, унинг асосини фенол, тимол, карвакрол ташкил этади. Тоғжамбулнинг етарли табиий бойликлари йўқ. У жуда осонлик билан уруғидан ҳамда ён новдаларидан кўпаяди. Уни табиий ўсадиган жойларида кўпайтириб, саноатда фойдаланиш мумкин.

Ялпиз. Ялпиз лабгулдошлар оиласига мансуб бўлган ва баландлиги 40-100 сантиметрга кўтарилиб тик ўсадиган кўп йиллик ўсимликларнинг Ўзбекистонда 4 та тури мавжуд. Ялпиз ариқ бўйларида, дарё қирғоқларида, булоқ атрофларида ҳамда тоғ олди қисмларидан тоғнинг ўрта минтақасигача бўлган ерларда, яъни денгиз сатҳидан 400-2300 м баландликларда ўсадиган ўсимликдир.

Ялпиз зиравор ва доривор ўсимлик сифатида жуда қадимдан маълум. Ялпизнинг ҳиди бош миянинг яхши ишлашига ёрдам беради. Италия ва Миср талабалари ўзлари билан бирга ялпизни дарсхоналарга олиб келар эканлар. Римликлар уйга келган меҳмонни яхши кутиб олиш ва хушчақчақ қилиш учун ялпиз сувини уйларида сепар ва столларни барглари билан артар эканлар.

Эрта баҳорда эндигина кўкариб чиққан ялпизлардан кўксомса ва

чучваралар тайёрланади. Барра барглари ва тўпгулларини салат, шўрва, сабзавот ва гўштдан тайёрланган таомларга солиб истеъмол қилиш мумкин. Ялпизнинг барги ва барра новдалари турли хил мевалардан тайёрланган компотларга, чойларга, конфетларга сирка, ароқ, коньяк, ликёрларга ёқимли ҳид беришда ишлатилади. Ялпиз сутнинг тез ачиб қолишидан сақлайди.

Медицинада ялпизнинг деярли ҳамма турлари овқат ҳазм қилиш органларининг фаолиятини яхшилашда, бод, ички касалликларни, қичимани даволашда ҳамда фармакологияда дориларни хушбўй қилишда қўлланилади. Ялпиз эфир мойларига бой бўлганлиги учун ундан парфюмерия саноатида тиш ювадиган паста ва парашоклар ишлаб чиқаришда фойдаланилади. Бу ўсимликнинг деярли ҳамма қисмида ўсиш шароитларига ва ривожланиш даврларига қараб 0,08-3% гача эфир мойлари бўлади. Унинг асосини ментол, ментон, терпиненлар ташкил этади.

Л.И.Медведева (1960) Копеттоғ этакларида ўсувчи ялпизда шоналаш даврида эфир мойларининг миқдори энг кўп бўлишини аниқлади. С.Н.Кудряшев (1932-1934) Душанбе атрофидаги Чортут деган жойда ўсаётган ёввойи ялпизларда 0,08-0,144% эфир мойлари борлигини текширди. Қораолма атрофларида ўсувчи ялпизлар гуллаш даврида баргида 0,08-1,4%, тўпгулида 0,5-0,9% эфир мойлари борлигини аниқлаган. Эфир мойлари очсариқ рангли, ўткир ҳидли, аччиқ таъмлидир.



Англия, АҚШ, Франция, ГДР, Япония,
Венгрия, Украина, Кавказ, Белоруссияда
ялпизлар экилмоқда. Ўсимлик
вегетатив, яъни илдиз пояларидан
қаламча қилиш усули билан
кўпайтирилади. Ўзбекистонда

ялпизлардан фойдаланишга эътибор
берилмаяпти. Уларнинг саноат
аҳамиятига эга бўлган табиий
бойликлари етарлидир.

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BIOKIMYO FANINING RIVOJLANISH TARIXI, BOSHQA FANLAR BILAN ALOQASI

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MAQOLA TARIXI

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KALIT SO'ZLAR

Kimyoviy jarayon,
noorganik birikmalar,
yadrokimyo, struktura,
genetika

ANNOTATSIYA

Biokimyo fanning predmetlari, ularning strukturaviy tuzilish mohiyati, fan kelib chiqish nazariylari asoslari organizm hujayrasidagi biokimyoviy jarayonlar bajarilishi haqida.

Kirish: BIOKIMIYO (biologik kimyo), tirik jismlarning kimyoviy tarkibi, hujayralar, organlar, to'qimalar va butun organizmlardagi tabiiy birikmalarining tuzilishi va aylanish yo'llarini, shuningdek, alohida kimyoviy o'zgarishlarning fiziologik roli va qonuniyatlarini o'rganuvchi fan. ularning tartibga solinishi. «Biokimyo» atamasini nemis olimi K. Noyberg 1903 yilda kiritgan. Biokimyo fanining tadqiqot predmeti, vazifalari va usullari hayotning barcha ko'rinishlarini molekulyar darajada o'rganish bilan bog'liq; tabiiy fanlar tizimida ham biologiya, ham kimyo bilan birdek bog'liq bo'lgan mustaqil sohani egallaydi. Biokimyo an'anaviy ravishda statiklarga bo'linadi, u tirik ob'ektlarni (hujayra organellalari, hujayralar, to'qimalar, organlar) tashkil etuvchi barcha organik va noorganik birikmalarining tuzilishi va xususiyatlarini tahlil qiladi; dinamik,

alohida birikmalarining barcha transformatsiyalarini o'rganadi (metabolizm va energiya); funktsional, individual birikmalar molekulalarining fiziologik rolini va hayotiy faoliyatning ma'lum namoyon bo'lishi paytida ularning o'zgarishini, shuningdek, turli taksonomik guruhlariga mansub organizmlarning tarkibi va metabolizmidagi o'xshashlik va farqlarni aniqlaydigan qiyosiy va evolyutsion biokimyoni o'rganish. Tadqiqot ob'ektiga qarab odam, o'simliklar, hayvonlar, mikroorganizmlar, qon, mushaklar, neyrokimyo va boshqalar biokimyosi kislotalar, membranalar. Maqsad va vazifalardan kelib chiqib, biokimyo ko'pincha tibbiy, qishloq xo'jaligi, texnik, oziq-ovqat biokimyosi va boshqalarga bo'linadi. Biokimyoning mustaqil fan sifatida shakllanishi boshqa tabiiy fanlar (kimyo, fizika) va tibbiyotning rivojlanishi bilan chambarchas bog'liq.



Yadrokimyo 16-17-asrning 1-yarmida kimyo va tibbiyot rivojiga katta hissa qo'shgan. Uning vakillari ovqat hazm qilish sharbatlari, safro, fermentatsiya jarayonlari va boshqalarni o'rgandilar, tirik organizmlardagi moddalarning o'zgarishi haqida savollar tug'dirdilar. Paracelsus inson tanasida sodir bo'ladigan jarayonlar kimyoviy jarayonlar degan xulosaga keldi. J. Silvius inson organizmidagi kislotalar va ishqorlarning to'g'ri nisbatiga katta ahamiyat berdi, uning buzilishi, uning fikricha, ko'plab kasalliklarning negizida yotadi. Ya.B.van Helmont o'simliklar substansiyasi qanday yaratilganligini aniqlashga harakat qildi. 17-asr boshlarida italyan olimi S.Santorio o'zi tomonidan maxsus ishlab chiqilgan fotoapparat yordamida insonning oziq-ovqat iste'moli va chiqishi miqdori nisbatini o'rnatishga harakat qildi. Biokimyoning keyingi rivojlanishi bir qator oqsillarning tuzilishi va funksiyasini o'rganish, fermentativ kataliz nazariyasining asosiy qoidalarini ishlab chiqish, asosiy almashinuv sxemalarini o'rnatish va boshqalar bilan bog'liq. 2-yarmdagi biokimyo taraqqiyoti. 20-asr ko'p jihatdan yangi usullarning rivojlanishi bilan bog'liq. Xromatografiya va elektroforez usullarini takomillashtirish tufayli oqsillardagi aminokislotalar va nuklein kislotalardagi nukleotidlar ketma-ketligini ochish mumkin bo'ldi. Rentgen strukturaviy tahlil bir qator oqsillar, DNK va boshqa birikmalar molekulalarining fazoviy tuzilishini aniqlash imkonini berdi. Elektron mikroskop yordamida ilgari noma'lum bo'lgan hujayra tuzilmalari topildi, ultratsentrifugalash tufayli turli xil hujayra organellalari (jumladan, yadro, mitoxondriya, ribosomalar) ajratildi; izotopik usullardan foydalanish

organizmlardagi moddalarni aylantirishning eng murakkab usullarini tushunishga imkon berdi va hokazo. Biokimyoviy tadqiqotlarda muhim o'rinni radio va optik spektroskopiyaning har xil turlari, massa spektroskopiyasi egalladi. L. Pauling (1951, R. Kori bilan birgalikda) oqsilning ikkilamchi tuzilishi tushunchasini shakllantirdi, F. Senger (1953) oqsil gormoni insulinning tuzilishini, J. Kendry (1960) esa oqsilning fazoviy tuzilishini aniqladi. miyoglobulin molekulasi. Tadqiqot usullarini takomillashtirish tufayli fermentlarning tuzilishi, ularning faol markazining shakllanishi va murakkab komplekslarning bir qismi sifatida ishlashi haqidagi tushunchaga juda ko'p yangilik kiritildi. DNKning irsiyat moddasi sifatidagi roli (O. Avery, 1944) o'rnatilgandan so'ng, nuklein kislotalar va ularning organizm xususiyatlarini meros qilib olish jarayonida ishtirok etishiga alohida e'tibor beriladi. 1953 yilda J. Uotson va F. Krik DNK ning fazoviy tuzilishi modelini (qo'sh spiral deb ataladi) taklif qildilar, bu uning tuzilishini biologik funktsiya bilan bog'ladi. Bu voqea biokimyo va umuman biologiya rivojida burilish nuqtasi bo'lib, biokimyodan yangi fan - molekulyar biologiyani ajratish uchun asos bo'lib xizmat qildi. Nuklein kislotalarning tuzilishi, oqsil biosintezidagi roli va irsiyat hodisalari haqidagi tadqiqotlar ham E. Chargaff, A. Kornberg, S. Ochoa, XG Koran, F. Senger, F. Jacob va J. Monod nomlari bilan bog'liq. shuningdek, rus olimlari A. N. Belozerskiy, A. A. Baev, R.B.lar moddaning tuzilishi va uning biologik funktsiyasi o'rtasidagi bog'liqlikni o'rnatdilar. Shu munosabat bilan biologik va organik kimyo yoqasida ilmiy izlanishlar ishlab chiqildi. Ushbu yo'nalish bioorganik



kimyo deb nomlandi. 1950-yillarda biokimyo va noorganik kimyo tutashgan joyda bioanorganik kimyo mustaqil fan sifatida shakllandi. Biokimyoning shubhasiz muvaffaqiyatlari qatoriga quyidagilar kiradi: energiya ishlab chiqarishda biologik membranalarning ishtirokini kashf qilish va bioenergiya sohasidagi keyingi tadqiqotlar; eng muhim metabolik mahsulotlarni aylantirish usullarini o'rnatish; asab qo'zg'alishning o'tish mexanizmlari, oliy asab faoliyatining biokimyoviy asoslari haqida bilim; genetik axborotni uzatish mexanizmlarini yoritish, tirik organizmlardagi eng muhim biokimyoviy jarayonlarni tartibga solish (hujayra va hujayralararo signalizatsiya) va boshqalar. **Biokimyoning zamonaviy rivojlanishi.** Biokimyo fizik-kimyoviy biologiyaning ajralmas qismi - o'zaro bog'liq va chambarchas bog'langan fanlar majmuasi bo'lib, unga biofizika, bioorganik kimyo, molekulyar va hujayrali biologiya va boshqalar kiradi, tirik materiyaning fizik-kimyoviy asoslarini o'rganadi. Biokimyoviy tadqiqotlar keng ko'lamli muammolarni o'z ichiga oladi, ularni hal qilish bir necha fanlar kesishmasida amalga oshiriladi. Masalan, biokimyoviy genetika irsiy axborotni amalga oshirishda ishtirok etuvchi moddalar va jarayonlarni, shuningdek, turli genlarning salomatlikdagi biokimyoviy jarayonlarni tartibga solishdagi rolini va turli genetik metabolik kasalliklarni o'rganadi. Biokimyoviy farmakologiya dorilarning molekulyar ta'sir mexanizmlarini, yaxshiroq va xavfsizroq dori vositalarini ishlab chiqishga hissa qo'shadigan immunokimyoni - antikorlar (immunoglobulinlar) va antijenlarning tuzilishi, xususiyatlari va o'zaro ta'sirini o'rganadi. Hozirgi bosqichda

biokimyo tegishli fanlarning keng uslubiy arsenalining faol ishtiroki bilan tavsiflanadi. Hatto biokimyoning fermentologiya kabi an'anaviy tarmog'i ham ma'lum bir fermentning biologik rolini tavsiflashda kamdan-kam hollarda yo'nalishli mutagenezsiz, tirik organizmlarda o'rganilayotgan fermentni kodlovchi genni o'chiradi yoki aksincha, uning ifodasini kuchaytiradi. Tirik tizimlardagi metabolizm va energiyaning asosiy yo'llari va umumiy tamoyillarini o'rnatilgan deb hisoblash mumkin bo'lsa-da, metabolizmning ko'plab tafsilotlari va ayniqsa uning tartibga solinishi noma'lumligicha qolmoqda. Og'ir "biokimyoviy" kasalliklarga (qandli diabetning turli shakllari, ateroskleroz, malign hujayralar degeneratsiyasi, neyrodegenerativ kasalliklar, siroz va boshqalar) olib keladigan metabolik kasalliklarning sabablarini aniqlash va uni yo'naltirilgan tuzatishning ilmiy asoslanishi (yaratish) ayniqsa muhimdir. dori-darmonlar, parhez tavsiyalari). Biokimyoviy usullardan foydalanish turli kasalliklarning muhim biologik belgilarini aniqlash va ularni tashxislash va davolashning samarali usullarini taklif qilish imkonini beradi. Shunday qilib, qondagi kardiospesifik oqsillar va fermentlarni aniqlash (troponin T va miokard kreatin kinaz izoenzimi) miokard infarktining erta tashxisini qo'yish imkonini beradi. Oziq-ovqatning kimyoviy va biokimyoviy tarkibiy qismlarini, ularning qiymati va inson salomatligi uchun ahamiyatini, oziq-ovqat mahsulotlarini saqlash va qayta ishlashning oziq-ovqat sifatiga ta'sirini o'rganadigan ozuqaviy biokimyo muhim rol o'ynaydi. Muayyan hujayra, to'qima,



organ yoki organizmning ma'lum bir turdagi biologik makromolekulalar va past molekulyar og'irlikdagi metabolitlarining butun majmuasini o'rganishga tizimli yondashuv yangi fanlarning paydo bo'lishiga olib keldi. Bularga genomika (organizmlar genlarining butun majmuasini va ularning ifodalanish xususiyatlarini tekshiradi), transkriptomika (RNK molekulalarining miqdoriy va sifat tarkibini belgilaydi), proteomika (organizmga xos bo'lgan oqsil molekulalarining barcha xilma-xilligini tahlil qiladi) va metabolomika (biokimyoviy strategiya va biokimyoviy tadqiqot usullaridan faol foydalangan holda organizmning barcha metabolitlarini yoki uning alohida hujayralari va hayotiy faoliyat jarayonida hosil bo'lgan organlarini o'rganadi. Genlar va oqsillarni yo'naltirilgan konstruksiyasi bilan bog'liq bo'lgan genomika va proteomikaning amaliy sohasi - bioinjeneriya ishlab chiqildi. Yuqoridagi yo'nalishlar biokimyo, molekulyar biologiya, genetika va bioorganik kimyo tomonidan teng ravishda yaratilgan. Biopolimerlarning yana bir toifasi uglevodlar yoki polisaxaridlardir. Biz ushbu moddalar guruhining tipik

vakillarini bilamiz - tsellyuloza, kraxmal, glikogen, lavlagi shakar. Ammo tirik organizmda uglevodlar turli xil funktsiyalarni bajaradi. Bu hujayrani dushmanlardan himoya qilish (immunitet), bu hujayra devorlarining eng muhim tarkibiy qismi, retseptorlar tizimlarining tarkibiy qismidir. Nihoyat, antibiotiklar. Laboratoriyalarda streptotrisin, olivomitsin, albofungin, abikovxromitsin, aureol kislotasi kabi o'smaga qarshi, virusga qarshi va antibakterial ta'sirga ega bo'lgan antibiotiklarning muhim guruhlarini tuzilishi aniqlangan. Bioorganik kimyoning barcha izlanishlari va yutuqlari haqida gapirib bo'lmaydi. Biz faqat aniq aytishimiz mumkinki, bioorganiklar amalga oshirilgan ishlardan ko'ra ko'proq rejalarga ega.

XULOSA: Biokimyo hayotni molekulyar darajada o'rganadigan molekulyar biologiya, biofizika bilan yaqindan hamkorlik qiladi. U ushbu tadqiqotning kimyoviy asosiga aylandi. Uning yangi usullari, yangi ilmiy tushunchalarining yaratilishi va keng qo'llanilishi biologiya fanining keyingi taraqqiyotiga xizmat qilmoqda. Ikkinchisi, o'z navbatida, kimyo fanlarining rivojlanishini rag'batlantiradi.

FOYDALANILGAN ADABIYOTLAR:

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OILADA BOLANING JINSIY YETILISH DAVRIDA NAMOYON BO'LADIGA O'ZIGA XOS XUSUSIYATLARI

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KALIT SO'ZLAR

*Pubertat, yetilish, o'smir,
tarbiya, o'zgarish,
balog'at, yosh, ta'sir,
genodotrop, gormonlar,
bezlar, ulg'ayish.*

ANNOTATSIYA

Bizga ma'lumki bola ulg'aygani sari unda turli xil fiziologik o'zgarishlar yuz berishini ko'rishimiz mumkin bo'ladi va ulardagi bu holatlar ularning ruhiyatiga, xarakteriga keskin ta'sir ko'rsatadi. O'zi umuman olib qaraydigan bo'lsak aynan jinsiy yetilish payti, bolalikdan o'tib o'smirlik davriga kelganda namoyon bo'luvchi bir yosh davrlardan biri hisoblanadi. Bu maqola orqali oilada o'sib kelayotgan bolaning, ya'ni o'smirning jinsiy yetilishdagi holatlarini va o'zgarishlarini ko'rishimiz mumkin bo'ladi. Oila borki, unda farzandlar tug'iladi, voyaga yetadi aynan shu davrda ularga oilaning tarbiyasi va muhiti katta ta'sir qiladi. To'g'ri va ijobiy muhitda o'sgan bola, ko'p holatlarda yaxshi tarbiyali va zukko bo'lib ulg'ayadi, shu bilan birgalikda vatanga fodasi tegadigan shaxs bo'ladi.

Ayan xalqimizda bir maqol bor "Bir bolaga yetti mahalla bosh" farzandlar ulg'aygani sari ularda turli xil o'zgarishlar yuz bera boshlaydi. Aynan bu xalqimiz tilida balog'ot yoshidagi bola yoki qiz ham deb aytilishi mumkin. Balog'at yoshi bolaning miyasidagi o'zgarishlar jinsiy gormonlar tuxumdonlar va moyaklar bo'lgan jinsiy bezlardan ajralib chiqa boshlaganda boshlanadi. Bu odatda qizlar uchun 10-11 yoshda va o'g'il bolalar uchun taxminan 11-12 yoshda sodir bo'ladi. Ammo balog'at yoshi qizlarda 8-13 yoshda, o'g'il bolalarda 9-14 yoshda bo'lishi odatiy holdir. Farzandingiz qachon balog'atga yetishini aniq bilishning imkoni yo'q. Farzandingizning miyasidagi erta

o'zgarishlar va gormonlar darajasi tashqaridan ko'rinmaydi, shuning uchun balog'at yoshi hali boshlanmagan deb o'ylash oson. Balog'at yoshi taxminan 18 oyda yoki 5 yilgacha davom etishi mumkin. Bu diapazon ham mutlaqo normaldir.

Ijtimoiy va hissiy jihatdan ham bolalarda o'zgarishlar yuz beradi. Kayfiyatning o'zgarishi va energiya darajasining o'zgarishi balog'at yoshining normal qismidir, shuningdek, mustaqillikni his qilish va ota-ona yordamini xohlash o'rtasidagi o'zgarishlar. Farzandingiz o'z shaxsiyatini yaratishni xohlaydi. Bu ularning yaqin oilasidan tashqarida mavjud bo'lgan munosabatlar va dunyoni o'rganishni anglatishi mumkin. Bu yangi



do'stlik va tajribalarni o'z ichiga olishi mumkin, shuningdek, yosh odam o'zining ijtimoiy dunyosi haqidagi tushunchasini kengaytirganda yuzaga kelishi mumkin bo'lgan muqarrar qiyinchiliklarni qanday hal qilishni o'z ichiga oladi. Ular, shuningdek, tanishish va ishqi munosabatlar orqali o'zlarining jinsiy va gender kimligini o'rganishni boshlashlari mumkin. Bularning barchasi yoshlar uchun juda muhim o'rganishdir, chunki tajribalar o'smirlarga nosog'lom munosabatlarni qanday aniqlash va ularning kattalar hayoti davomida rivojlanib boradigan sog'lom munosabatlarga qanday jalb qilish haqida tushunarli asos yaratadi.

Balog'at va o'smirlik - bu bolalarning mustaqil bo'lish davri (masalan, maktabga borish va qaytish). Ular, shuningdek, maktabda rahbarlik lavozimini egallash yoki yarim kunlik ish topish kabi ko'proq mas'uliyatni qidirayotgan bo'lishi mumkin. Yosh odam tashqi ko'rinishi va yangi tanasining o'zgarishi haqida ham sezgir bo'lishi mumkin. Maxfiylik va shaxsiy makon ular uchun juda muhim bo'lishi mumkin. Ular bir kun o'zini o'zi his qilish, ikkinchi kuni esa "o'qdan himoyalaniish" hissi o'rtasida almashishi mumkin. O'smirlik davrida kayfiyat o'zgarishi kutilishi mumkin, chunki yoshlar hali ham tanalarida juda ko'p jismoniy va gormonal o'zgarishlar ro'y berayotgan paytda o'z his-tuyg'ularini qanday boshqarishni o'rganmoqdalar. Yosh bola ko'proq tavakkal qilishi, chegaralarni chetlab o'tishi va ota-onasining qoidalarini shubha ostiga qo'yishi mumkin, chunki ular qanday qilib individual bo'lishni o'rganishni yoki ota-onasidan ajralib, o'z shaxsiyatini shakllantirishni o'rganishni boshlaydilar. Ushbu ijtimoiy va hissiy o'zgarishlar

yoshlarning qaror qabul qilish qobiliyatini oshirish va o'z harakatlarining oqibatlarini tan olish va tushunishni o'rganish bilan birga uning rivojlanishidagi standart bosqichdir.

Spurt - bu qisqa muddatli harakatni, shoshqaloqlik bilan sodir bo'ladigan narsani tasvirlash uchun ishlatiladigan so'z. Va o'sish sur'ati shunchaki: tanangiz o'sib bormoqda va bu juda tez sodir bo'ladi! Balog'atga yetganingizda, yenglaringiz har doim qisqarib borayotgandek tuyulishi mumkin va shimlaringiz doimo suv toshqini uchun tayyor bo'lgandek tuyulishi mumkin - bu sizning katta o'sish sur'atlarini boshdan kechirayotganingiz uchun. Taxminan 2 yildan 3 yilgacha davom etadi.

I bosqich — pubertat oldi bosqichi (jinsiy balog'atga yetishdan oldingi davr). Bu davr ikkilamchi jinsiy belgilarning bo'lmasligi (namayon bo'lmasligi) bilan xarakterlanadi.

II bosqich — pubertat boshlanishi. O'g'il bolalarda tuxumdon shakli biroz kattalashadi. Junlar har-har joyda va to'g'ri bo'ladi. iz bolalarda ko'krak bezlari to'lisha boradi. Jinsiy lablar atrofini biroz jun bosadi. Bu bosqichda gipofiz keskin faollashadi, uning genodotrop va somatotrop vazifalari ortadi. Somatotrop gormonlar ajralishining kuchayishi bu bosqichda qizlarda ko'proq kuzatiladi. Bu esa ularda bo'y o'sish jarayonlarining kuchayishini ta'minlaydi. Jinsiy gormonlarning ajralishi kuchayadi, buyrak usti bezining vazifasi faollashadi.

III bosqich — o'g'il bolalarda tuxum donning kattalashishi davom etadi. Jinsiy a'zo ning kattalashishi boshlanadi. Qiz bolalarda sut bezlarining rivojlanishi davom etadi, jun qoplashi kengayib boradi.



Qon tarkibida genodotrop gormonlar miqdorining ortishi amalga oshadi. Jinsiy bezlar vazifalari faollashadi. O'g'il bolalarda somatotropik gormoni ajralishining kuchayishi bilan ularning bo'yi o'sishi tezlashadi.

IV bosqich — o'g'il bolalarda jinsiy a'zo eniga kengaya boradi, tovush o'zgaradi, yuzlarga sepkil chiqa boshlaydi, yuzlariga, qo'ltiq osti va qovlariga jun chiqa boshlaydi. Qiz bolalarda sut bezlari jadal rivojlana boshlaydi, ulardan chiqadigan tuklar kattalarnikiga o'xshab boshlaydi. Bu bosqichda androgen va estrogen gormonlar kuchli ajralib chiqa boshlaydi. O'g'il bolalarda bo'yi jadal o'sishini belgilab turuvchi somatotropinning yuqori darajasi saqlanib qoladi. Qiz bolalarda esa somatotropin miqdori kam ayadi va mos ravishda bo'yining o'sishi ham sekinlashadi.

V bosqich — o'g'il bolalarda jinsiy organlar va ikkilamchi jinsiy belgilar to'la rivojlanib bo'ladi. Bu bosqichda qiz bolalarda menstruatsiya turg'unlashadi. Menstruatsiyaning yuzaga kelishi jinsiy balog'at davrining boshlanganidan dalolat beradi. Bu vaqtga kelib tuxumdonlar urug'lanishga tayyor yetilgan tuxum hujayralarini yetiltirib chiqara boshlaydi. Ular kattaroq yoshli ayollar kabi shakllangan bo'ladi deyarli.

O'zi aslida bularning barchasi bir so'z bilan aytganda Pubertat davri deyiladi. pubertat davr (lotincha: pubertas — bo'yiga yetish, jinsiy yetilish) — odam (qarang Balog'atga yetish) va hayvonlarda organizmning jinsiy ko'payish qobiliyatiga ega bo'lgan individual rivojlanish davri. Tadqiqotchilarning ta'kidlashlaricha, jinsiy tafovutlar aynan yoshlik chog'idanoq namoyon bo'la boshlaydi. O'gil bolalar,

masalan, yoshlikdanoq mustaqillikka intilsa, qiz bolalar o'zaro bog'liqlikka, kimlar bilandir birga bo'lishga intiladi. Agar o'g'il bola ko'proq ko'pchilik ishtirok etadigan o'yinlarni afzal ko'rib, ko'chaga chopsa, qizlar kichikrok tengqurlar guruhida jipslikda o'ynashni, o'yin chog'ida ham bir-birlariga hamdardlik ko'rsatish, tushunishga intiladi, agressiya ular muloqotida kam bo'ladi (Lever, 1978)

Jinsiy o'zgarishlardagi fiziologik o'zgarishlarga qaraydigan bo'lsak, Odamning jinsiy faoliyatini boshqarishda quyidagi markazlar ishtirok etadi: 1) bosh miya katta yarim sharlari po'stlog'i. Bu yerda jinsiy faoliyat ongli tarzda boshqariladi va umumiy nazorat qiladi; 2) gipotalamus. Jinsiy faoliyat paytida kuzatiladigan vegetativ reaksiyalarni ta'minlaydi; 3) orqa miyaning II—IV dum g'aza segmentlarida joylashgan ereksiya va II—IV bel qismi segmentlarida joylashgan eyakulatsiya markazi.

Har bir inson bir oz farq qiladi, shuning uchun har bir kishi o'z tanasining jadvali bo'yicha balog'atga etishishni boshlaydi va o'tadi. Bu sizning ba'zi do'stlaringiz hali ham bolalarga o'xshab ketishining sabablaridan biri, boshqalari esa kattalarga o'xshaydi. Bu gormonlar tanangizning tashqi ko'rinishida o'zgarishlarni yaratganidek, ular ham ichki o'zgarishlarni keltirib chiqaradi. Sizning tanangiz barcha yangi gormonlarga moslashayotganda, ongingiz ham shunday. Balog'atga etishish davrida siz xijolat bo'lishingiz yoki ilgari hech qachon boshdan kechirmagan kuchli his-tuyg'ularga ega bo'lishingiz mumkin. O'zgaruvchan tanangiz qanday ko'rinishidan tashvishlanishingiz mumkin. Siz o'zingizni haddan tashqari sezgir his



qilishingiz yoki osongina xafa bo'lishingiz mumkin. Ba'zi o'smirlar odatdagidan ko'ra o'zlarini yo'qotadilar va do'stlari yoki oilalariga g'azablanadilar. Ba'zida bu yangi his-tuyg'ularning barchasi bilan kurashish qiyin bo'lishi mumkin. Odatda odamlar sizning his-tuyg'ularingizni ranjitmoqchi emas yoki ataylab sizni xafa qilmoqchi emas. Sizni g'azablantirgan oilangiz yoki do'stlaringiz bo'lmasligi mumkin - bu sizning moslashishga harakat qilayotgan yangi "balog'at miyangiz" bo'lishi mumkin. Va sozlash boshida qiyin bo'lishi mumkin bo'lsa-da, asta-sekin osonlashadi. Bu kimdir bilan gaplashish va his-tuyg'ularingiz yukini baham ko'rishga yordam beradi - do'stingiz yoki undan ham yaxshisi, ota-onangiz, katta aka-ukangiz yoki avvaldan buni boshidan kechirgan kattalar. Sizda jinsiy aloqada yangi, chalkash his-tuyg'ular va ko'plab savollar bo'lishi mumkin. Kattalar uchun estrogen va testosteron gormonlari tanangiz sizga bolani yaratish qobiliyati kabi yangi mas'uliyat yuklayotganligidan dalolat beradi. Shuning uchun barcha savollaringizga javob olish juda muhimdir. O'smirlar uchun jinsiy ta'lim dasturi izchil bo'lishi kerak, chunki u xuddi shu maqsadlarga xizmat qiladi. Bugungi kunda bizning jamiyatimizda jinsiy hayotni buzish tendentsiyasi kuzatilmoqda, ajralishlar soni ko'paymoqda. Bundan tashqari, bu demografik vaziyatga ta'sir ko'rsatishning eng yaxshi usulidan uzoqdir. Fuqarolik va mehmon nikohining paydo bo'layotgan va konsolidatsiya qilingan tushunchalari ularning chalkashliklarini bolalar o'zlashtiradigan dunyoning umumiy manzarasiga olib keladi. Dunyoning to'g'ri modeli va jins-rol munosabatlarining shakllanishi uchun kuchli va do'stona oila

modelidan yaxshiroq narsa yo'q. Shunga asoslanib, keling, o'spirinlar uchun jinsiy tarbiya olib boradigan asosiy vazifalarni va maktabning bu masaladagi rolini shakllantiraylik:

- Sog'lom turmush tarziga ijobiy munosabatni shakllantirish va haqiqiy, do'stona oilaga ega bo'lish istagi.
- O'z ehtiyojlaringizni va ularni qondirishning etarli usullarini tushunishda yordam bering.
- Bolalarga ular bilan nima yuz berayotganini tushunishga va o'zgarishlarga moslashishga imkon beradigan malakali ma'lumot berish.

Maktab - bu o'g'il bolalar va qizlar nafaqat o'qish va yozishni, balki boshqa jins vakillari bilan birinchi munosabatlarini o'rnatishni o'rganadigan ijtimoiy muassasa. Shuning uchun o'qituvchilar bu jarayonda ota-onalardan kam bo'lmasligi kerak. Ularning vazifalari yanada globaldir, chunki oilada boshlangan o'spirinlarning jinsiy tarbiyasini tuzatish maktab o'qituvchisi yoki ijtimoiy ishchining yelkasiga tushadi. Jinsiy balog'atga etish jarayoniga psixo-ijtimoiy ta'sirni tahlil qilishning muhim asosi Belskiy, Steinberg va Draper (1991) hisoblanadi. Reproduktiv rivojlanishning evolyutsion nazariyasi, bu balog'atga etishishni tezlashtirishda oilaviy va ekologik stresslarning roliga qaratilgan. Evolyutsion biologiyadagi hayot tarixi nazariyasiga asoslanib, nazariya shuni ta'kidladiki, "erta tajribaning asosiy evolyutsion funktsiyasi - hayotning birinchi 5-7 yili - bu bolada resurslarning mavjudligi va bashorat qilinishini tushunishga undashdir (keng ma'noda). muhitda, boshqalarning ishonchliligi va



yaqin shaxslararo munosabatlarning mustahkamligi, bularning barchasi rivojlanayotgan shaxsning reproduktiv harakatlarini qanday taqsimlashiga ta'sir qiladi» Belskiy va boshqalar. odamlar erta bolalik muhitining o'ziga xos xususiyatlariga sezgir bo'lib rivojlanganligi haqidagi nazariya, va turli muhitlarga ta'sir qilish bolalarni turli reproduktiv strategiyalarni ishlab chiqishga moyil qiladi. Oiladagi va uning atrofidagi ekologik stress omillari (masalan, resurslarning tanqisligi yoki beqarorligi) ota-onalar faoliyatiga putur etkazadigan va ota-onalar investitsiyalari sifatini pasaytiradigan sharoitlarni yaratadi (masalan, nikohdagi nizolarning kuchayishi, ota-onalar va bolalar o'rtasidagi munosabatlarda salbiy va majburlashning kuchayishi va ijobiylikni kamaytirish orqali). va ota-ona va bola munosabatlarida qo'llab-quvvatlash). Nazariya shuni ko'rsatadiki, bolalar balog'atga etishishni tezlashtiradigan (ya'ni, balog'atga etishning erta boshlanishini yoki tezroq balog'atga etishish tezligini qo'zg'atadigan), jinsiy faollikni tezlashtiradigan va yo'naltiradigan tarzda rivojlanib, ushbu oilaviy va ekologik sharoitlarga javob beradi. nisbatan beqaror juftliklarga nisbatan shaxs.Belsky va boshqalar, 1991). Qanday bo'lmasin, nazariya bolalarning balog'atga etishish rivojlanishini mahalliy sharoitlarga mos ravishda moslashtirishini ta'kidlaydi. Umuman olganda, balog'atga etishish tezligining mavjud o'lchovlari bilan solishtirganda, o'sish egri chizig'ini modellashtirishning hozirgi qo'llanilishi balog'at yoshidagi rivojlanishdagi ichki va individual farqlarni ancha batafsil tahlil qilish va shu bilan yanada aniqroq va nozik gipotezalarni tekshirish imkonini beradi.

balog'at yoshining bir xil boshlanishi va shunga o'xshash boshlang'ich tempga ega bo'lgan, shuning uchun 12,5 yoshga qadar kamolotning o'xshash darajasini saqlab qolgan; yoki balog'at yoshi bir xil boshlangan, lekin tezroq boshlang'ich sur'atga ega bo'lgan, shuning uchun 12,5 yoshda etuklikning yanada rivojlangan darajasiga tezlashadi. Ikkinchi nishab nuqtai nazaridan, bu bizga keyingi balog'atga etish tezligi va balog'atga etishish davriga oid shunga o'xshash savollar to'plamini hal qilish imkonini berdi. Nihoyat, o'sish egri chizig'i modeli bizga bir vaqtning o'zida ikkinchi maqsadli guruhimizga nisbatan mos keladigan, o'zaro savollar to'plamini berish imkonini berdi. psixolog emas, shuning uchun tarbiyaning bu tomoni muayyan qiyinchiliklar bilan qabul qilinadi. Bundan tashqari, yosh avlodning jinsiy tarbiyasi zamonaviy va ayniqsa, oilaviy ta'limning eng zaif yo'nalishlaridan biridir. O'qituvchilar singari hamma ota-onalar ham nimani o'z ichiga olishini to'liq anglay olmaydilar.

Albatta, hamma ota-onalar ham o'qituvchi va psixolog emas, shuning uchun tarbiyaning bu tomoni muayyan qiyinchiliklar bilan qabul qilinadi. Bundan tashqari, yosh avlodning jinsiy tarbiyasi zamonaviy va ayniqsa, oilaviy ta'limning eng zaif yo'nalishlaridan biridir. O'qituvchilar singari hamma ota-onalar ham nimani o'z ichiga olishini to'liq anglay olmaydilar. Ota-ona qarshi jinsdagi bolalarni tarbiyalayotgan to'la-to'kis oilalarda o'spirinlarning jinsiy ta'limidagi gender muammolari keskin. Biroq, turmush qurgan juftlik, ba'zida qizi yoki o'g'li bilan ma'lum bir mavzuda kim bilan suhbatlashishini hal qila olmaydi. Biroq, bu



yerda asosiy narsa - bu jinsiy tarbiya o'qimishli odamga pedagogik ta'sir ko'rsatadigan kompleks ekanligini tushunishdir. Ushbu masala ikki tomondan ko'rib chiqiladi: Bu axloqiy tarbiyaning ajralmas qismidir. Agar bola qiz sharafi, axloqiy poklik, erkaklik, ayolga hurmat, do'stlik va muhabbat kabi tushunchalarni aniq shakllantirgan bo'lsa, unda siz o'z vazifangizni bajardim deb hisoblang. Ikkinchi jihat - bu sog'liq va farovonlik bilan bog'liq bo'lgan ijtimoiy va gigienik muammo. Ya'ni, ma'lum bir minimal bilim shunchaki zarurdir.

Xulosa qiladigan bo'lsak, bu o'zgarishlar tabiiy holatlardir, biroq bu o'zgarish kattalar teshiruvda oz bo'lsada nazorat qilinib turadigan bo'lsa maqsadga muvofiq bo'ladi. Yoshlar o'zlarida paydo bo'lib boradigan allanechuk istaklarni hamisha

ham jilovlab ololmaydi, qarama-qarshi jinsdagi o'z tengqurlari oldida endi o'zlarini noqulay his qiladigan bo'lishadi. Mana shu davrda yoshlar o'zlarini qiziqtiradigan ishlar bilan band bo'lsa, ko'ngli odamlarga xayrixohlik bilan to'lib-toshib tursa, ularda jins masalalariga odatdan tashqari qiziqish paydo bo'lmaydi. Shuning uchun yoshlardagi ijodiy mayllarni, ko'p qirralli qiziqishlarni tarbiyalab borish, ularning jismoniy tarbiya va sport bilan shug'ullanishlarini targ'ib qilish nihoyatda muhim. O'sib kelayotgan avlodning jamiyat normalarini to'la qonli qabul qilishi, o'z davrining yaxshi va kerakli kishisi bo'lib yetishishi oilaning boshqa rasmiy tarbiya maskanlari bilan o'rnatadigan to'g'ri munosabatlari bevosita bog'liq.

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СУРХОНДАРЁ РЕГИОНИДА ГИПЕРТОНИЯ КАСАЛЛИГИДА КУЗАТИЛАДИГАН ЦЕРЕБРАВАСКУЛЯР АСОРАТЛАРНИ ЎРГАНИШ

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⁴ РИКИАТМ СВМФ “РЭХ” бўлими бошлиғи,

⁵ ТТА ТФ “Ички касалликлар” кафедраси клиник ординатори

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KALIT SO'ZLAR

Сурхондарё, артериал
гипертензия,
симптоматик
артериал гипертензия,
стенокардия, инфаркт,
энцефалопатия,
инсульт, деменция.

ANNOTATSIYA

Бу мақолада гипертония касаллигини Сурхондарё региониди кечиши, даволаш усуллари, асоратларини ривожланиш даражаси ва олдини олиш чора тадбирлари хақида ёритилган. Асосан асоратларини олдини олиш юзасидан илмий тахлиллар олиб борилган. Текширувимида Гипертония касаллиги билан оғриган 224 нафар беморда касалликнинг кечиши ва даволаш асослари, асоратлар ривожланиш даражаси аниқланди. Бизнинг кузатувимидаги асоратларнинг кўпчилигини 96 % МНС (марказий нерв системаси) билан боғлиқ асоратлари ташкил қилди.

Муаммонинг

долзарблиги:

Мамлакатимизда дунёнинг кўпчилиги касалликларининг умумий структурасида бўлгани каби, юрак қон-томир касалликлари асосий ўринни эгаллайди. Юрак – қон томир тизими патологияси ҳозирги замон тиббиётининг ижтимоий тиббий муаммоларидан бири ҳисобланади. Ҳозирги кунда катта ёшли аҳоли ўртасида гипертония касаллиги ва улар оқибатида келиб чиқадиган турли хил асоратлар кўп учрамоқда. Аҳолининг катта ёшлилар орасида фақат артериал гипертензиянинг тарқалиши тахминан 20-25 % ни ташкил қилади. Яъни сайёрамизнинг ҳар тўртинчи ёки

бешинчи аҳолиси юқори қон босимидан азият чекади. Сурхондарё региониди иқлим шароити республикамизнинг бошқа вилоятларига қараганда хароратнинг юқорилиги ва қуруқлиги инсон организмига, айниқса гипертония касаллиги билан оғриган беморларга таъсири катта аҳамиятга эга. Гипертония касалликларини келтириб чиқарувчи хавф омиллари бу – ирсий мойиллик, нотўғри овқатланиш рационини, кам ҳаракатли кун тартиби, ортиқча тана вазни, асаб-рухий зўриқиш, уйқу давомийлигини ва тартибини бузилиши, чекиш, алкоголь маҳсулотларини миёридан ортиқ истеъмол қилиш, экологик жараёнлар,



эндокрин тизими касалликлари (қандли диабет, Ишенго-Кушинг, семизлик, метаболик бузилишлар). Артериал гипертензия синдроми деганда қон босимининг барқарор ошиши билан кечадиган барча патологик ҳолатлар назарда тутилади. Симптоматик артериал гипертензияда қон босимининг кўтарилиши касалликнинг асосий белгиларидан бири бўлса, гипертония касаллигида эса аксарият ҳолларда касалликнинг ягона клиник белгиси сифатида намоён бўлади. Гипертония касаллиги ривожланишида муҳим аҳамиятга эга бўлганларидан бири бу – наслий мойилликдир. Ота – оналаридан бирида артериал гипертензия мавжуд бўлса, фарзанда ушбу касалликнинг келажақда пайдо бўлиш эҳтимоли 25%, иккаласи ҳам касал бўлганда эса 50% гача етади.

Тадқиқод мақсади: Сурхондарё аҳолиси орасида гипертония касаллиги учраши ва кузатиладиган асоратларини ривожланиш даражасини ва турини ўрганиш ва олдини олиш.

Тадқиқод объекти: Ўзбекистон Республикаси Соғлиқни сақлаш вазирлиги Республика

ихтисослаштирилган Кардиология илмий – амалий тиббиёт марказининг Сурхондарё вилояти минтақавий филиалида ётиб даволанган 224 нафар беморда олиб борилди. Текширувда бўлган беморлар асосий ва қўшимча шикоятлари, анамнез маълумотлари, объектив текширув маълумотлари, невростатус маълумотлари, MMSE шкаласи, лаборатор (УҚА, УПА, қон биохимиявий анализи, коагулограмма, АЧТВ), инструментал (ЭКГ, ЭхоКГ, доплерография УУА, бош мия МРТ текшируви, СМАД, Тредмел тест, Холтер – мониторинг ЭКГ, УТТ, рентгенография) текширувлари ва тор мутахассислари (невролог, эндокринолог, окулист) кўриги олиб борилди.

Тадқиқод натижалари: Кузатувдаги беморлар ёши бўйича тақсимооти қуйидагича:

25 – 40 ёшдаги беморлар 22 нафар (10%);

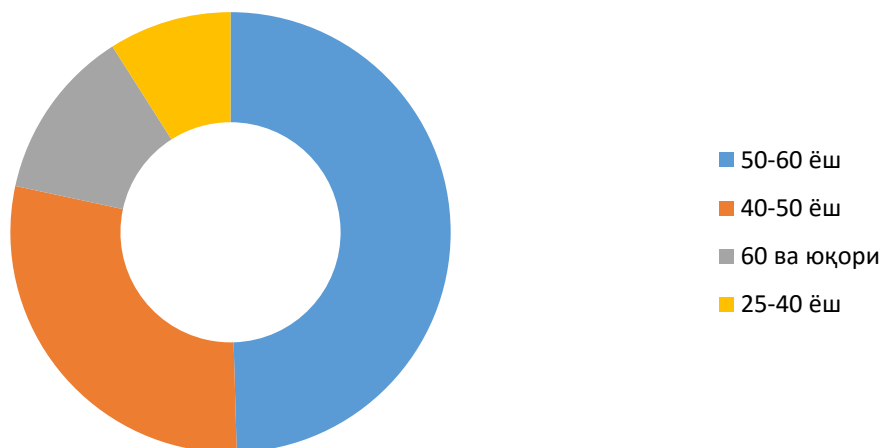
40 – 50 ёшдаги беморлар 56 нафар (25%);

50 – 60 ёшдаги беморлар 112 нафар (50%);

60 ва ундан юқори ёшдаги беморлар 34 нафар (15%).



Кузатувдаги беморлар ёши бўйича тақсимооти

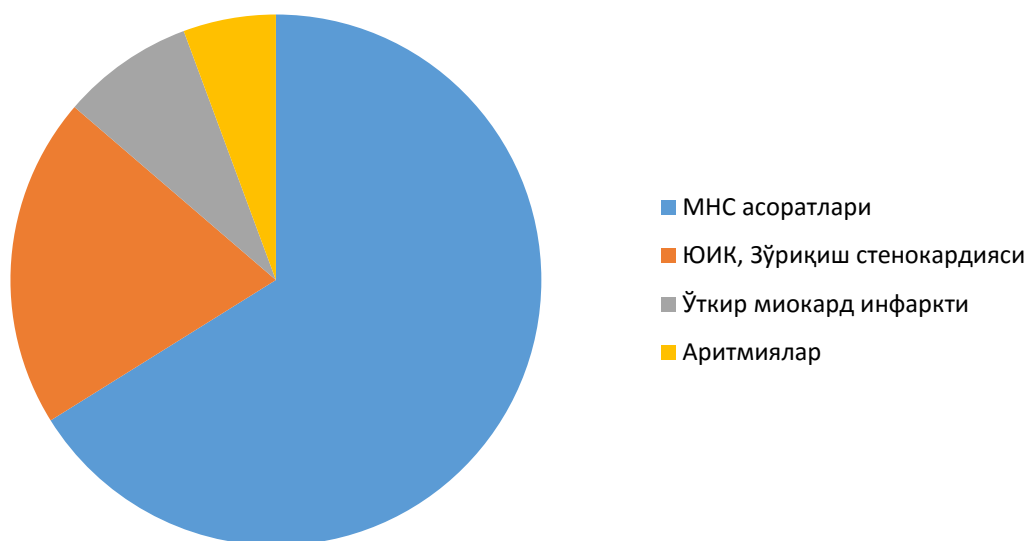


Текширувдаги беморларнинг 91 нафари (41%) эркаклар, 133 нафари (59%) аёллар ташкил этади. Ўткир миокард инфаркти 23 нафар беморда, 87 нафар беморда ЮИК, Зўриқиш стенокардияси прогрессивланиши кузатилди. Кузатувдаги 100 % беморлар невролог кўригидан ўтказилди, йиғилган шикоятлар, анамнез маълумотлари, объектив ва невростатус маълумотлари – клиник намоёнлик спектри, MMSE текширув натижалари, доплерография УУА, бош мия МРТ текшируви маълумотлари,

диагностик критерияларга асосланган ҳолда беморларнинг 216 нафарида (86 нафари эркак, 130 нафари аёллар) марказий нерв системаси асоратларидан: астеноневротик ва астеноневротик синдроми (астения) – 58 нафар беморда, дисциркулятор энцефалопатия – 28 нафар беморда, сурункали мия ишемияси 154 нафар беморда, Бинсвангер касаллиги (томирли деменция) – 16 нафар беморда, ўткир бош мия қон айланиши бузилиши – 18 нафар беморда аниқланди.



Асоратлар



Ушбу беморлар тор мутахассислар (невролог, эндокринолог, окулист) кўригидан ўтказилди. Кўрик натижаларига асосланиб беморларга стандарт даво режасига қўшимча даво тарзида антигипоксантик ва мембранопротектор даво (динар 50 мг/мл), нейропротектив ва ноотроп даво (глиатон 250 мг/мл – 5 кун, сўнгра капсула х 2 маҳал 1 ой) қўлланилди. Беморлар 10 стационар кун даво муолажалари қабул қилдилар. Сўнгра 1 ой стандарт ушлаб турувчи даво режаси билан уйига жавоб берилди. Назоратга олинган беморлар ҳар 1 йилда 4 марта яна қайта амбулатор кўрикка чақирилди ва тўлиқ клиник текширувдан ўтказилди. Текширув натижаларига кўра гипертония касаллиги билан беморларда тор мутахассисликлар (невролог, окулист, эндокринолог) кўригидан 100% ўтказилиши – ва стандарт даво режасига динар ва глиатон қўшилиши асоратларни олдини олиш ва бемор ҳаёт

фаолиятини яхшилашини эришилиши аниқланди.

Гипертония касаллигининг маълум бир босқичларида стенокардия хуружлари кузатилиши мумкин. Бу тож томирлар атеросклерози ва чап қоринчани гипертрофияси ҳисобига нисбий коронар қон айланиши етишмовчилиги ривожланиши билан боғлиқ. Гипертония касаллиги билан оғриган беморларда аввал жисмоний зўриқишда, кейинчалик эса тинч ҳолатда ҳам стенокардия хуружлари ва хансираш кузатилиши чап қоринча етишмовчилиги ривожланганлигидан далолат беради. Гипертония касаллигининг асосида томирларни бошқарувчи нерв марказларининг бирламчи деструкцияси – невроз сабаб бўлиб, кейинроқ бунга артериал босимни бошқаришда қатнашадиган нейрогормонал ва буйрак механизмларининг қўшилиши ётади. Касалликнинг бошланғич даврларида юқоридаги ўзгаришлар функционал хусусиятга эга бўлиб, авж олиб борган



сари марказий нерв тизими, юрак ва бошқа аъзоларнинг органик зарарланишлари кўшилади. Гипертония касаллигида астения, бош миёда қон айланишининг сурункали ва ўткир бузилишлари кузатилиши ва ўчоқли ёки қуйидаги уч турдаги insultлар кўринишида бўлиши мумкин:

- Ишемик (мия инфаркти);
- Геморрагик (мия ичига қон қуйилиши);
- Субарахноидал қон қуйилиш.

Артериал босимнинг кескин ошишига жавобан бош миё артериялари тонусининг ўта кўтарилиши натижасида унда қон айланишининг булиши, ишемия юзага келади. Артериал босим кўтарилган вақтда миёга кўп миқдорда қон келиши натижасида артериялар етарли даражада компенсатор қаршилик кўрсата олмайди, веналарда қоннинг оқиб кетиши қийинлашади. Юрак қон – томир касалликларида, айниқса гипертония касаллигида астения оғир физик зўриқишсиз пайдо бўладиган, аста – секин кучайиб борадиган, 1 ойдан ортиқ давом этадиган аномал спонтан холсизлик (бўшашиш)ни англатади.

Миёнинг сурункали ишемияси – қон оқимининг пасайиши билан патологик жараёнда томирларнинг иштирок этиши натижасида миё моддасининг аста – секин прогрессив диффуз функционал – морфологик шикастланиши сифатида қараладиган қон – томир миё патологиясининг махсус шакли. Миёнинг сурункали ишемияси, ўткир, локал, церебрал ишемия, аста – секин прогрессив диффуз қон айланишининг бузилиши

билан боғлиқ бўлиб, миё фаолиятининг ёмонлашишига олиб келади.

Гипертония касаллиги билан оғриган беморларда дисциркулятор энцефалопатия – сурункали бош миё қон айланиши бузилиши оқибатида бош миёда кўплаб кичик некроз ўчоқлари юзага келади ва бу ўз навбатида ўчоқли неврологик белгилар билан намоён бўлади.

ХУЛОСА: Текширув натижаларига кўра Сурхондарё регионида гипертония касаллиги билан оғриган беморларда энг кўп учрайдиган асоратлар бу – марказий нерв системаси зарарланиши билан кечадиган асоратлар 216 нафар беморда 96 % ни ташкил этди. Айниқса сурункали миё ишемияси 154 нафар беморда, астеноневротик ва астеноневротик синдроми (астения) – 58 нафар беморда аниқланди. Бу кўрсаткич гипертония касаллиги билан оғриган беморлар ҳаёт фаолиятига Сурхондарё регионининг иссиқ ҳамда қуруқ иқлими ва бунинг сезиларли тарзда инсон қон реологиясига таъсир кўрсатиши аниқланди. Гипертония касаллигини асоратли кўринишлари аҳоли орасида аёлларда (59%) эркакларга қараганда кўп учраши ва касалликни асоратланиш ҳолатларини олдини олиш учун бирламчи тиббий санитар ёрдам муассасаларида санитария тарғибот ишларини (соғлом турмуш тарзи) олиб борилишини янада такомиллаштириш мақсадга мувофиқ хисобланади.

Текширувдаги беморлардан йиғилган анамнез маълумотлари ҳулосасига кўра гипертония касаллиги билан оғриган беморларнинг 220 нафарида оилавий анамнез, яъни беморнинг ота-онаси ёки



яқин қариндошлари артериал гипертензия билан турли хил даражада оғриганлиги ҳамда нотўғри овқатланиш рационида эканликлари аниқланди. Бундан келиб чиқадики гипертензия касаллиги ривожланишида асосий хавф омилларидан наслий мойилликнинг ахамияти ва овқатланиш рационини тўғри ташкил қилиш, яъни миёрида

суюқлик истеъмолига ахамият бериш, жисмоний ҳаракатнинг инсон организмига таъсири тўғрисида аҳоли ўртасида экологик муҳитни инобатга олган ҳолда санитария тарғибот ишларини олиб боришни кучайтиришга алоҳида эътибор қаратиш лозим.

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TUNNEL EFFECT IN THE FIELD OF LASER RADIATION

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atom, tunnel breakdown
mechanism*

ABSTRACT

The paper describes the process of ionization of an atom in the field of laser radiation. To describe the tunnel breakdown mechanism, the Keldysh-Faisal-Ries models can be applied. The ionization of an atom in a constant field is considered as multiphoton absorption

One of the fundamental differences between multiphoton ionization and single-photon ionization is as follows. Since the energy of each light quantum in the multiphoton case can be very small, and hence the period of light oscillations is large, multiphoton ionization should, in the limit, go over to the case of ionization of an atom in a constant electric field.

As is known, field ionization is described by quantum mechanics as electron tunneling under a potential barrier. In other words, the ionization of an atom in a constant field can be considered as multiphoton absorption, when the energy of each individual photon tends to zero, and

the number of absorbed photons becomes infinite [1].

The condition for the emergence of a tunnel effect in an alternating field can be qualitatively understood as follows (Fig. 1). Due to coherence, laser radiation can be represented as a classical electromagnetic wave, and the magnetic component of the wave can be neglected. Then an electric field acts on the atomic electron, periodically changing in time with the frequency of laser radiation. If the electron has time to tunnel through the atomic potential well with depth U in one half-cycle of the field, it will be ionized in accordance with the laws of the tunneling effect described by formula (1).



$$N \propto \exp\left[-\frac{8\pi}{3h} \sqrt{\frac{mcU^2}{2\pi e^2 I}}\right] \quad (1)$$

Otherwise, as they say, the multiphoton regime will be realized, which is described by the formula

$$N \sim I^q \quad (2)$$

In this formula, m and e are the mass and charge of the electron, and U is the ionization potential of the atom [2]. Occurrence of a tunnel effect in an alternating field. For one half-cycle, the field in the vicinity of the atom changes from curve (1) to curve (2). If during this time the electron has time to "leak" through the potential barrier formed by the field of the atomic core and the laser field, a tunnel effect will occur; otherwise, the multiphoton regime is realized.

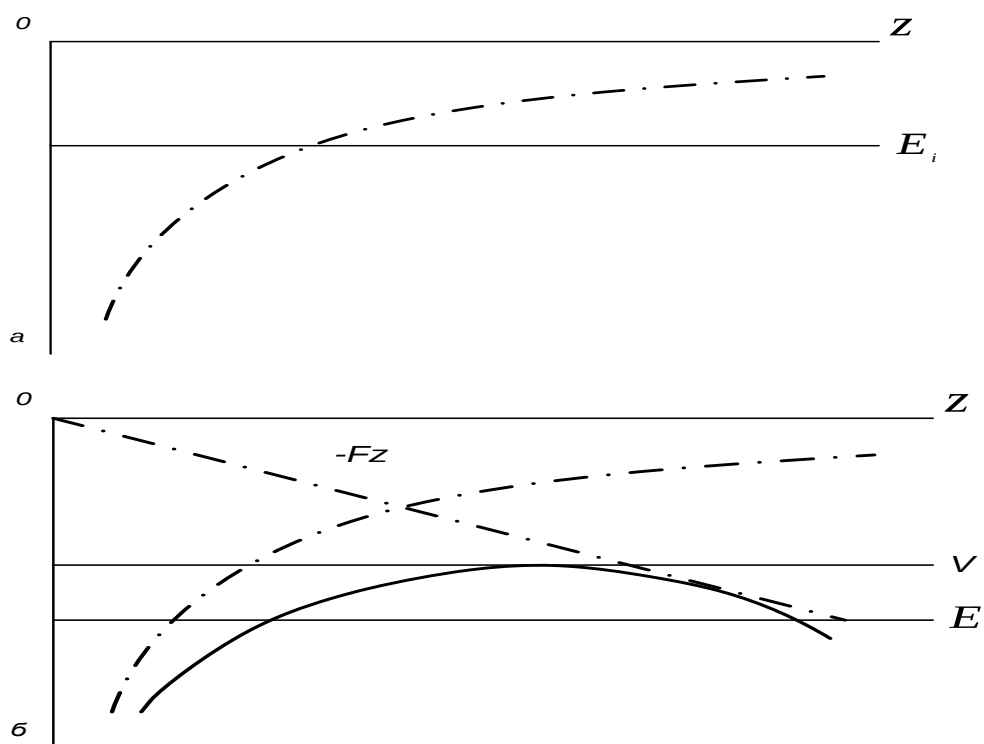


Figure 1. Scheme of electron tunneling through a quasi-static potential barrier in the direction of the field;

a) – atom in the absence of an external field, dashed line – dotted line – Coulomb potential,

b) an atom in a field of intensity F , the solid curve is a potential barrier. 0 is the atomic nucleus, E_i is the binding energy of an electron in an atom, V is the barrier

height, z is the coordinate along the field direction. At $V > E_i$, the above-barrier decay of the atom occurs

To describe the tunnel breakdown mechanism, it is better to apply the Keldysh-Faisal-Ries models as a theoretical method. Theoretical methods for describing the



process of nonlinear ionization of atoms are based on several basic laws that characterize this process. Let's list these patterns.

- High intensity of the radiation field, at which the process of non-linear ionization of atoms is realized; we are talking not only about the fields of subatomic ($F < F_a$), but also atomic ($F = F_a$) and superatomic ($F > F_a$) intensity.

- The need to describe the transitions of an electron occurring under the influence of two fields of comparable amplitude - the Coulomb field of the atomic core and the external radiation field.

- The need to take into account the perturbation of the atomic spectrum by an external ionizing field in the event of a resonant displacement of atomic states, or a non-resonant change in their energy due to the Stark effect.

- The possibility of using a semi-classical method for describing the interaction of an atom with a radiation field, in which the field is described in the language of classical physics, and the atom in the language of quantum mechanics. The possibility of describing radiation in the language of classical physics is due to the large number of coherent photons, under the influence of which the process of nonlinear ionization occurs.

- The impulsive nature of the radiation field of high intensity and the typical shape of the pulse, in which the duration of the front is of the order of the duration of the pulse itself. Numerically, the values of ω and τ lie in the range from nano- to femtoseconds. Thus, in the course of the theoretical description of n , the nature of the inclusion of the external field, which can

be both instantaneous and adiabatic, should be taken into account [3].

Obviously, with such a number of basic regularities, there is no hope of creating an analytical theoretical description of the process of nonlinear ionization of atoms. Accordingly, in principle, there are only two possibilities - the development of a numerical calculation method for fixed values of the parameters characterizing the atom and the radiation field, or the development of approximate methods of analytical description that are valid only in a certain range of changes in the main parameters, or when one or other basic regularities are neglected.

In addition to the above basic regularities, we will point out a number of significant points that determine the nature of the theoretical description of the process of nonlinear ionization of atoms.

Theoretical methods for studying the interaction of electromagnetic radiation with atoms are based on certain approximations for solving the Schrödinger equation for the "atom + radiation field" system. Since the field of electromagnetic radiation is turned on and off, the non-stationary Schrödinger equation with an initial condition corresponding to the absence of an electromagnetic field is a Cauchy problem (i.e., the problem of finding a solution to an equation that satisfies certain initial conditions). Its solution is expanded in terms of the unperturbed eigenfunctions of the system after the field is turned on, and the probabilities of various transitions are determined. In this case, the field of electromagnetic radiation is assumed to be classical, which corresponds to the actual setting of experiments on the interaction of laser radiation with atomic



systems [3]. Thus, the following conclusions can be drawn from this:

1. The analysis of literary sources has shown that the existing works devoted to the breakdown of liquids do not have a complete theory of the breakdown of liquids. The main electrical properties of liquids seem to be determined by the "short range order", i.e. the nature of the interaction of molecules with their nearest neighbors, as is the case with semiconductors.

2. Despite the difficulties associated with the lack of a complete theory of the breakdown of liquids, breakdown patterns were established. The main processes of

electrical breakdown of a liquid in the initial stage are multiphoton ionization, cascade, or avalanche ionization. The first electrons appear due to a frequency-dependent tunneling effect, at high frequencies the tunneling mechanism is equivalent to multiphoton ionization.

3. A breakdown using laser radiation can be obtained using photochemical substances or due to the nonlinear ionization of a substance.

4. The main parameters that affect the nature of the interaction of laser radiation with matter are the ionization potential of the substance and the intensity of laser radiation.

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APPLYING THE DIGITAL ECONOMY IN AGRICULTURE

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ABSTRACT

The largest sector of the economy of the Republic of Uzbekistan is agriculture. First of all, it serves to meet the demand of the population for food. In this regard, the agriculture of the Republic of Uzbekistan has made great strides. The republic's agriculture produces almost the bulk of foodstuffs in sufficient quantities for our population. Agriculture provides industry with raw materials. Today, more than 60% of the fiber used in the country's light and textile industries is domestically produced cotton fiber.

Introduction

It is known that agricultural production is often associated with land. The relationship between land ownership, management and use and development is called agrarian relations.

The peculiarity of agricultural production is that here the laws of nature are directly related to economic laws, because agricultural production is directly related to living things - land, plants, livestock. Here the land is the object of labor and the main means of production, the object of economic management, it does not wear out, it is not eaten, and if it is treated well, its productivity will be good.

The basis of the agro-industrial complex is agriculture. All sectors of the agro-industrial complex are connected with agriculture. Some of them produce and supply means of production for agriculture, while others prepare, process

and deliver agricultural products to consumers. Many industries provide services for the smooth operation of these networks.

All means of production used in agriculture can be private, private, or collective. At present, the main forms of farming in agriculture are in the form of farmers and peasants, whose production processes are based on the use of different climatic and soil conditions.

All the means of production available in agriculture (tractors, machines, vehicles, buildings, structures, perennial trees, productive livestock and working animals) constitute the capital structure. Working capital includes: young and domestic animals, fodder, seed stocks, chemical fertilizers, various means of production with a service life of less than one year - inverters, fuel and lubricants. 'ladi. Capital circulates, that is, from the form of money



to the form of production, from it to the form of commodity, and back to the form of money.

In agriculture, production time is long and working hours are determined by days. In agriculture, the production process is seasonal. Combines, for example, use a variety of planting tools in a short time. Given the relative density of the population and the limited availability of agricultural land, private ownership of land will be introduced, with state ownership remaining.

METHOD AND RECOMMENDATION

Agriculture, which is the basis of the agro-industrial complex, has its own characteristics. These features distinguish agriculture from other industries and set their own requirements for the organization of production. These features include:

1. The impact of natural factors in agriculture is great. They stem from the seasonality of production. This requires taking into account the efficient use of available resources throughout the year in the organization of production. The temporary inactivity of the population during the winter months causes some social problems. These issues pose a number of challenges for scientists, experts and business people.

2. Living organisms are involved in agriculture as a means of production. This, in turn, requires professionals to know not only the laws of economics, but also the laws of biology, and to take them into account in the organization of production. The efficiency of agricultural labor depends

to a large extent on the biological potential of plants and livestock.

3. Land is the main means of production and has its own characteristics of use. Denying them or ignoring them enough can lead to major negative consequences.

4. There is a big difference between the period of material expenditures in agriculture and the period of receipt of income from activities. In other words, only expenses are incurred throughout the year. This is due to the fact that the costs of preparing the land for planting, the purchase and consumption of seeds, fertilizers, fuel and lubricants, labor costs are paid on a monthly basis. The crop ripens in a certain period. The crop is sold and then cash comes in. Of course, in practice, there may be a certain amount of cash flow as a result of advances to agricultural enterprises on the basis of contracts, the use of loans or the organization of certain services. However, in general, the fact that expenses are spent during the year, and revenues fall only in certain periods, creates its own objective requirements. Agrarian policy should be guided by this feature.

5. Agricultural production is carried out on very large areas. This, in turn, creates certain requirements for production, location of settlements, which must be taken into account in the formation of the material and technical base of agriculture.

6. It consumes a part of agricultural products as seeds, fodder, food.

7. Many types of agricultural products can not be stored for a long time. This problem is exacerbated by the fact that agricultural products ripen almost



simultaneously. This, in turn, requires that the organizations engaged in the production and processing of agricultural products work tirelessly, and in some periods have a very large capacity. In the rest of the year, these forces are relatively idle. This situation requires large warehouses for processing industries. This, in turn, has a negative impact on the cost of the product.

Of course, an in-depth study of such peculiarities and the organization of production with constant consideration will ensure the effective functioning of agriculture. Undoubtedly, with the development of science and technology, the impact of these features of agriculture is relatively small, but not completely eliminated.

Agriculture is one of the largest sectors of the economy of the Republic of Uzbekistan. Today, the role of agriculture in the country's economy is very large. This sector accounts for 26-30% of the country's GDP. In 2020, 26.8% of the country's GDP was generated in this sector. More than half of the hard-earned foreign exchange earnings necessary for the economy of our country comes from the export of products of this sector. More than 60% of the population lives in rural areas. The living standards of our people, the employment of a large part of human resources depend on agriculture. Today, more than 28% of the labor force employed in the economy is engaged in agriculture and forestry. That is why the attention to agriculture, especially in the post-independence years, is rightly growing.

The role of agriculture in the national economy

Nº	Indicators	2010	2012	2014	2018	2020
1.	Share of gross agricultural output in the country's GDP, %	30,4	30	30,6	28,6	26,8
2.	Growth rate of gross agricultural output, %	103,2	104,5	106,1	107,3	110,1
3.	The share of cotton fiber and food products in total exports, %	32,9	25,9	25,9	22,5	21,9
4.	Share of agricultural labor resources, %	29,7	29,6	29,1	28,3	28,4

According to the table, agriculture is the largest sector of the economy of the Republic of Uzbekistan, and its share is declining from year to year. In this regard, it should be noted that in 2010-2020 there was a steady decline in agriculture. The share of agriculture in the country's economy has decreased only due to the relatively rapid development of industry

and services. This is a very positive process. As the country's economy grows rapidly, the share of agriculture in it will decrease. As a result, we will become a country with a developed industry and developed services.

The success of economic and social reforms in the country largely depends on the level of agricultural development. Because



agriculture is an area of political, economic and social significance for our country, it performs the following functions:

- forms the food fund of our country;
- ensures the independence of our country in the field of food;
- supplies raw materials for the processing industry of agricultural products;
- Provides jobs for the population.

The agriculture of the Republic of Uzbekistan consists of crop and livestock sectors. The crop sector includes cotton, cereals (mainly wheat), potatoes, vegetables, melons, tobacco, fodder crops,

vegetable oilseeds (molasses, sunflower), horticulture and viticulture. . In animal husbandry, cattle breeding, sheep and goat breeding, poultry farming, horse breeding (horse breeding), rabbit breeding, camel breeding, and pig breeding have been formed and developed. In addition, silkworm breeding, beekeeping and fishing are well developed in the country's agriculture. At present, 6.2 mln. head of cattle, 11.1 mln. There are head sheep and goats.

Land fund of the Republic of Uzbekistan and its distribution by users

№	Ground users	1996 йил		20010йил		2018 йил	
		минг га	%	минг га	%	минг га	%
	Total land fund That's it	44405,0	100,0	44405,0	100,0	44410,3	100,0
1.	Lands used by agricultural enterprises	25317,8	57,0	25112,6	56,6	24819,4	55,8
2.	Lands of forestry enterprises	8695,5	19,7	8446,3	19,1	8402,6	18,9
3.	Lands of industry, transport, defense, communications and other organizations	1868,9	4,2	1926,3	4,4	2264,3	5,2
4.	Residential areas	226,4	0,5	231,2	0,5	238,7	0,5
5.	Reserve land	7492,1	16,8	7472,5	16,8	7432,8	16,7
6.	Lands of hydraulic engineering and other water management organizations	793,8	1,7	804,6	1,8	822,4	1,8
7.	Lands of nature protection, health and cultural significance	10,5	0,02	70,8	0,1	74,3	0,1
8.	Other lands	-	-	340,7	0,7	430,1	0,9

The table shows that in 2018, the bulk of the Republic's land fund, 55.8%, was allocated to the agricultural sector. If we take into account the fact that the forestry, partly hydraulic and other water

management organizations (although small amounts of agricultural products) and some farms under the Ministry of Defense also produce agricultural products, the



above it can be understood that the figure occupies a much larger share.

As of January 2018, there are more than 3,691 hectares of irrigated land, more than 230,000 hectares of orchards and vineyards.

During the years of independence, the structure of agricultural production in the country has changed dramatically. Due to today's demand, land resources involved in agricultural production are allocated mainly for cotton and grain crops.

CONCLUSION

A video conference chaired by the President of the Republic of Uzbekistan Shavkat Mirziyoyev on July 31 on the issues of accelerating the development of cotton, replanting of vacant lands, efficient use of public lands and export of agricultural products meeting was held.

As you know, in a video conference held on July 4 this year, from July 5 to September 5 was announced "Current two months of harvest." The meeting provided a detailed analysis of the work done in this regard.

It was noted that the delay in the development of cotton has not been eliminated in the past, and the development of cotton is still 8-10 days behind, and in some places 12-15 days behind. During the same period last year, an average of 5-7 pods were formed per bush, today it is no more than 3-5.

The main reason for this is that in June-July, local governors and sector leaders, especially farmers, abandoned cotton cultivation under the pretext of harvesting and replanting. said the head of state. The inter-row cultivation and efficient use of water are not well organized. Studies have shown that most

fields do not have cultivators, watermen or workers. In some districts, cotton has even been abandoned. In many areas, cotton is thirsty, leading to crop losses.

According to the Republican working groups, the cultivation of inter-row cotton does not meet the requirements at all. In some areas, due to the involvement of tractors in other activities, cultivation has been delayed, and the gaps between the rows of cotton have reached the point of cracking. Due to the lack of conditions in the "houses of mechanizers", the "squad" and "naryad" systems do not work, 45-50% of cultivators are not used enough.

Four sector leaders in Zarbdor, Guzar, Baghdad and Uychi districts have been ordered to be fired for failing to perform their duties in agriculture.

It was noted that it is necessary to conduct timely and high-quality agro-technical measures on cotton fields, to work between rows without thirst, and to use cultivators effectively.

Unfavorable weather this year has led to an increase in cotton pests and insects. Scientists have found that the survival rate of caterpillars is 76%. This is the highest figure in recent years. In fact, reaching 50 percent of that number is considered an emergency. This year, the number of insects is 1.5 times higher. This problem requires systematic oversight by every responsible manager, especially farmers, to strengthen their personal responsibility. Scientists predict the spread of spiders on 460,000 hectares, caterpillars on 390,000 hectares and alfalfa on 42,000 hectares this year. Therefore, 127 scientists headed by the heads of research institutes of the Academy of Sciences and the Tashkent State Agrarian University were sent to the



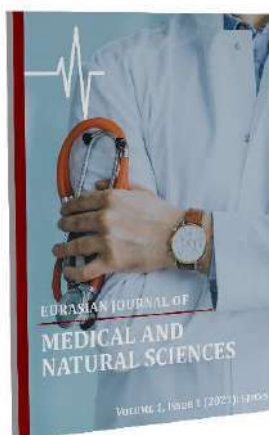
regions. An additional 100 billion soums has been allocated from the budget to protect cotton from pests and insects. But some sector leaders are still indifferent. Thousands of hectares have been chemically treated, but in practice the expected results have not been achieved. That is, the processing is of poor quality and transferred to the name. As a result, in some areas, caterpillars have damaged 4,000 to 5,000 hectares of cotton. Another 8,000-10,000 hectares are at risk.

Improper irrigation also has a negative impact on the development of cotton. Sector leaders and water officials are not doing enough to ensure a fair distribution of water. For example, 50-60%

of the water supplied to a particular district is used for irrigation of secondary and horticultural crops. Due to improper use of water, insufficient water supply and lack of night irrigation, 10-15% of cotton fields in some districts are thirsty. In some districts, 60-65% of the area is irrigated, despite a clear mandate to irrigate cotton by juice. In this regard, the Ministry of Water Resources and the State Veterinary Committee have been tasked with attaching staff from their own systems to farms to produce local fertilizers and irrigate cotton with juice. Measures will be taken against sector leaders and farmers who use water inefficiently.

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SARATONDA PLEVITNING RIVOJLANISH MEXANIZMLARI

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KALIT SO'ZLAR

*Metastaz, saraton
hujayralari,
neyroendokrin
karsinoma, essudatsiya,
plevrit turlari,
bioterapiya,
dekortikatsiya.*

ANNOTATSIYA

*Saraton kasalligining rivojlanish bosqichlari, plevrit
asoratlanish rivojlanishi, turlari, kasallik patologiyasida ròl
beradigan holatlar.*

Kirish: O'pkadan boshlangan saraton kasalligi birlamchi o'pka saratoni, tanadagi boshqa joydan o'pkaga tarqaladigan saraton esa ikkinchi darajali o'pka saratoni deb ataladi.

Asosiy qism: Saraton o'sishi boshlanadigan hujayralar turiga asoslanib, O'pka birlamchi saraton kasalligi ikkiga bo'linadi.

Kichik hujayrali o'pka saratoni (KHDAK)

Kichkina hujayrali bo'lmagan o'pka saratoni o'pka saratonining eng keng tarqalgan turi hisoblanadi. O'pka saratonining 80 dan 85 foizigacha kichik hujayralarsiz o'pka saratonlari. U kichik hujayrali o'pka saratoniga qaraganda sekin o'sadi va tarqaladi / metastaz beradi.

Saraton hujayralari turiga nomlangan NSCLC ning ikkita asosiy turi:

- **Adenokarsinoma:** Adenokarsinom a Qo'shma Shtatlarda o'pka saratonining eng keng tarqalgan turi bo'lib, odatda o'pkaning tashqi qismlari bo'ylab boshlanadi. Adenokarsinoma barcha o'pka saratonlarining 40 foizini tashkil qiladi. Odatda shilimshiq kabi moddalarni ajratadigan hujayralardan boshlanadi. Adenokarsinoma shuningdek, hech qachon chekmagan odamlarda o'pka saratonining eng keng tarqalgan turi hisoblanadi, ammo bu saraton hozirgi yoki sobiq chekuvchilarda ham uchraydi.

- **Katta hujayrali karsinomalar:** Katta hujayrali karsinomalar anormal ko'rinishga ega bo'lgan hujayralari katta bo'lgan saraton guruhini anglatadi. Bu o'pka saratonining 10-15 foizini tashkil qiladi. Katta hujayrali karsinomalar o'pkaning biron bir joyida



boshlanib, tez o'sishga moyil bo'lib, davolanishni qiyinlashtiradi. Katta hujayrali karsinomaning pastki turi bu **katta hujayrali neyroendokrin karsinoma**, kichik hujayrali o'pka saratoniga o'xshash tez o'sadigan saraton. O'pka saratoni rivojlanishining yana bir belgisi nafas oladi. Bu holat zinadan ko'tarilganda yoki yurish yordam beradi. Bu o'smaning qisman nafas yo'llarini to'sib qo'yishi, o'pkaga stress o'tkazadigan va nafas olish to'xtab ko'krak qafasidagi urish to'planishi tufayli paydo bo'ladi.

Doimiy charchoq yoki uning kuchayishi kuzatilganda ko'rinish zarur. Bu tanada o'zgarishlar, shu zararli jarayonlar, sodir bo'layotganining belgisidir. Agar charchoq hisi vazn yo'qotish va ishtahaning yo'qolishi bilan birga kuzatilsa, unda o'pkaning rivojlanish ko'rsatkichi ancha yuqori bo'lishi mumkin bo'lgan xoli emas.

Tanada noma'lum sababdan og'riq paydo bo'ladi

O'pka saratoni aniq aniqlash bilan kuzatish mumkin bo'lgan kasallik turi. Ba'zida ayrim alomatlar miya yoki umurtqaga singib ketgan holatda paydo bo'ladi. Shundan so'ng bosh og'rihi, qulay, uyquchanlik, kamqonlik va boshqa qismlarida ham og'riqlar bo'lishi mumkin. Saratonda plevral infuzoin shakllanishining mexanizmlari har xil va malign o'smaning ta'siri bilan bog'liq:

To'g'ridan-to'g'ri bilan. Biz metastazlarning plevra ichiga kirib borishi haqida gapiramiz, bu kapillyar o'tkazuvchanlikning oshishiga olib keladi va limfa tugunlarining obstruksiyasi bilan to'la. Bu plevradan limfa chiqishining pasayishiga va torakal kanal yoki bronxning tiqilib qolishiga olib keladi.

Vositachilik qilganda. Gipoproteinemiya (qon plazmasidagi oqsil miqdorining pasayishi), o'sma pnevmoniyasi va o'pka emboliyasi rivojlanadi.

Plevra ichiga ekssudatsiya (suyuqlikni chiqarish) sababi ham oldingi radiatsiya terapiyasi bo'lishi mumkin. Saratonda plevrit rivojlanishining turli predispozitiv omillari va mexanizmlari tufayli o'pka saratonida o'simta jarayonida plevraning ishtiroki bilan bog'liq bo'lgan malign efüzyon va plevra karsinomatozini farqlash kerak.

Ko'pincha onkologiyada o'pka plevriti quyidagi sabablar kombinatsiyasi bilan rivojlanadi:

plevrage metastaz, ortiqcha kapillyar o'tkazuvchanlikka olib keladi va efüzyona sabab bo'ladi;

mediastinning limfa tugunlarining shikastlanishi (o'pka o'rtasida ko'krak qafasida joylashgan), bu limfa oqimining buzilishi bilan to'la;

limfa yo'lining shikastlanishi tufayli chylotoraxning rivojlanishi (plevra bo'shlig'ida yog 'miqdori yuqori bo'lgan limfa to'planishi);

bronxning obstruksiyasi, bu bronxial lümen o'simta tomonidan bloklanganda yuzaga keladi, bu plevra bo'shlig'ida bosimning pasayishiga olib keladi, suyuqlik oqimiga hissa qo'shadi.

Saraton kasalligida plevrit tananing himoya funktsiyalarini buzish fonida rivojlanadi. Yallig'lanish jarayoni ham har doim otoimmün kasalliklar va travma bilan bog'liq. Tanadagi onkologik jarayonlar ko'pincha plevritning ekssudativ shakli - gidrotoraks (plevra bo'shlig'ida suyuqlik to'planishi) rivojlanishi bilan birga keladi.

Yiringli plevritning belgilari



Yiringli plevritning klinik ko'rinishi boshqacha. 25% hollarda alomatlar yo'q. Kasallik tekshiruv vaqtida aniqlanadi. Patologiya asosan suyuqlik hajmi 300 ml ga etganida o'zini namoyon qila boshlaydi.

Ichki organlarda xavfli o'smaning lokalizatsiyasi bilan xarakterli belgilarning rivojlanishi qayd etiladi. O'pka saratonida plevrit quyidagi alomatlar bilan birga keladi:

Ko'krak qafasidagi og'riq. Surunkali alomat asosan mezotelyomada (birlamchi yumshoq to'qimalar neoplazmasi) kuzatiladi. Qattiq og'riq qovurg'alar va vertebra metastazlardan ta'sirlanganda paydo bo'ladi. Alomat ko'krak qafasidagi saraton o'simtasi rivojlanishiga xosdir.

Yo'tal. Plevritning izolyatsiyalangan shakli bilan odatda quruq bo'ladi. Nafas olish yo'llari infektsiyasi qo'shilsa, balg'am ajralib chiqib boshlaydi. Bronxning lümeninde malign neoplazma mavjud bo'lganda, balg'amda qon va yiring mavjud.

Nafas qisilishi. Plevritning ekssudativ shakli bo'lsa, u o'pka atrofida suyuqlik to'planishi fonida rivojlanadi. Effuziya organi siqadi, uning to'liq kengayishiga to'sqinlik qiladi, bu esa diafragma harakatini cheklashga olib keladi. Nafas qisilishi erkin suyuqlik miqdori ortishiga qarab, turli darajadagi zo'ravonlikka ega bo'lishi mumkin.

Terining oqarib ketishi. Plevral efüzyonning to'planishi bilan bo'yin venalari hududida qon ketishining buzilishi kuzatiladi, ular shishiradi va vizual tekshiruv paytida sezilarli bo'ladi.

Ushbu belgilarga qo'shimcha ravishda, saraton kasalligida metastatik plevrit isitma, vazn yo'qotish va ishtahani yo'qotish bilan birga keladi. Shuningdek, terlashning kuchayishi, ortiqcha charchoq

va letargiya mavjud. Ko'krak qafasining ta'sirlangan tomonining harakati nafas olayotganda, sog'lom o'pka bilan solishtirganda orqada qoladi.

Shish plevritining xarakterli belgisi nafas qisilishining asta-sekin o'sishi bo'lib, u ko'krak qafasi hududida xarakterli og'irlik bilan birga keladi. Bemor doimo og'riqli tomonida yotadi, bu holatning vaqtincha yaxshilanishiga yordam beradi, chunki sog'lom o'pka to'liq to'g'rilanadi.

Ko'pincha plevrit saraton bilan rivojlanadi: o'pka (bemorlarning 24-50%); tuxumdonlar (10% gacha); sut bezlari (48%).

Kamroq hollarda, yo'g'on ichak, oshqozon va oshqozon osti bezida malign jarayon mavjudligida asorat yuzaga keladi - 1 dan 6% gacha. Prognoz va terapevtik variantlar o'sma jarayonining tarqalishi va tabiati bilan belgilanadi. Dori terapiyasiga sezgirlik darajasi muhimdir.

Agar xavfli o'sma tuxumdon, ko'krak va o'pka saratoni kabi sitostatiklarga sezgir bo'lsa, u holda terapevtik choralarni o'z vaqtida qabul qilish bilan ekssudatsiyaning qaytalanishini oldini olish mumkin. Tizimli terapiyaning samarasizligi bilan prognozni yaxshilash uchun plevrodez amalga oshiriladi.

Tashxisni o'rnatish

Saraton kasalligida plevra efüzyonunu tashxislashning eng oddiy va tezkor usuli bu ko'krak qafasi rentgenogrammasi. Ta'sir qilingan hudud qorayadi va suyuqlik miqdorini baholashga imkon beradi. Aniqlik tashxis qo'yish uchun kontrastli kompyuter tomografiyasi buyuriladi. Ushbu protsedura sizga efüzyon mavjudligini aniqlash va saraton rivojlanish bosqichini baholash imkonini beradi.



Agar kerak bo'lsa, torakoskopiya buyuriladi. Jarayon minimal invaziv bo'lib, ko'krak qafasiga maxsus asbobni kiritishni o'z ichiga oladi. Uning oxirida videokamera mavjud bo'lib, uning yordamida mavjud qoidabuzarlikni ko'rish mumkin. Torakoskopiya paytida biopsiya o'tkaziladi.

Laboratoriya diagnostikasi majburiydir: umumiy protein darajasini baholash, anemiyani aniqlash va kaltsiy darajasini oshirish uchun qon testi;

malign hujayralarni aniqlash uchun plevral suyuqlik sitologiyasi;

pH, glyukoza, oqsil va laktat dehidrogenazni aniqlash uchun efüzyonun biokimyoviy o'rganilishi.

Moskvadagi "Medscan" klinikasi plevral efüzyon diagnostikasi uchun zamonaviy ekspert klass uskunalaridan foydalanadi. Tashxis qo'yish uchun instrumental va laboratoriya tadqiqot usullari qo'llaniladi. Bemorga faqat optimal davolash taktikasini ishlab chiqish uchun zarur bo'lgan diagnostika muolajalari tayinlanadi.

Onkologiyada plevritni davolash

Yiringli plevritni davolash birinchi yordam chorasi sifatida torasentezdan foydalanishni o'z ichiga oladi. Jarayon lokal behushlik yordamida amalga oshiriladi va ichkarida to'plangan suyuqlikni olib tashlash uchun ko'krak devorining teshilishini o'z ichiga oladi. Ushbu yondashuv o'pkani darhol to'g'rilash va klinik ko'rinishlarni olib tashlash imkonini beradi. Ammo onkologiyadagi bu chora vaqtinchalik, chunki bir muncha vaqt o'tgach, suyuqlik yana to'planadi. Ikkinchi protsedura, agar shifokor malign shakllanish kemoterapevtik ta'sirga yaxshi javob beradi deb taxmin qilsagina amalga oshiriladi.

Plevra bo'shlig'iga naycha - drenaj kateteri kiritilishi mumkin. Uning uchi tashqarida va suyuqlikni maxsus idishga to'kish uchun ishlatiladi. Intraplevral immunoterapiya (bioterapiya) ham buyurilishi mumkin, bu limfokin bilan faollashtirilgan hujayralar va interleykin-2 ni plevra bo'shlig'iga kiritishni o'z ichiga oladi. Ushbu dorilar aniq antitumor ta'sirga ega. Salbiy reaksiyalar orasida tana haroratining oshishi bo'lishi kerak. Bu antipiretiklar tomonidan olib tashlanadi. Bu usul asosan kimyoterapiya muolajalaridan keyin qo'llaniladi.

Bemorning ahvolini uzoq muddatli yaxshilash uchun plevrodez buyuriladi. Jarayon preparatni plevra bo'shlig'iga kiritishni o'z ichiga oladi. Preparat efüzyonning keyingi to'planishiga yo'l qo'ymaslik uchun plevra varaqlarini bir-biriga yopishtiradi. Ushbu yondashuv 70-90% hollarda samarali. "Medscan" tibbiyot markazida eng samarali va xavfsiz bo'lgan eng yangi avlod dori vositalari qo'llaniladi.

Dekortikatsiya juda kam uchraydigan jarrohlik amaliyotidir. Operatsiya paytida plevra bo'limlari chiqariladi. Shish o'choqlarini kamaytirish va plevra bo'shlig'ida suyuqlik to'planishining oldini olishga qaratilgan o'smaga qarshi terapiyani buyurish majburiydir.

Onkologiyada plevrit uchun dori terapiyasi quyidagilarni o'z ichiga oladi:

bakterial infeksiyaga qarshi kurashish uchun antibakterial vositalar (patogenning sezgirligi oldindan aniqlanadi);

yallig'lanishni bartaraf etish uchun steroid bo'lmagan yallig'lanishga qarshi dorilar va bemorning farovonligini yaxshilash uchun og'riq qoldiruvchi vositalar;

qon pıhtılarını yo'q qilish uchun antikoagulyantlar;



nafas olish yo'llaridan balg'amni olib
tashlash uchun ekspektoranlar;

bronxial lümenni kengaytirish uchun
bronxodilatatorlar.

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CLINICAL EFFICACY & VARIOUS TREATMENTS OF SENSORINEURAL HEARING LOSS AND ITS ASSOCIATION WITH METABOLIC SYNDROME

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ABSTRACT

This research article aims to analyze the clinical efficiency of several medical therapies to treat sensorineural hearing loss. Association of sensorineural hearing loss and metabolic syndrome is shown. Hearing defeat is increasing at an exponential rate. Damage to human sensory hair cells and SGNs is usually permanent. It is treated with a variety of medical therapy. DNA coding for a neurotrophic protein is transferred into cochlear cells when electricity is applied. The circular window of cochlea is being studied for pharmaceutical supply. SGNs are protected against degeneration by their slow-release and high-payload medication delivery capabilities. A novel viral vector and gene-editing technique have restored hearing in mice with genetic hearing loss. SGN repopulation and neurotrophin supply, as well as hearing loss, have all been investigated. These and other developments in pharmaceutical treatment will facilitate the translation of pre-clinical results into clinical trials. Hearing loss is considered a complication of metabolic syndrome. Hearing loss is more likely in those with metabolic syndrome.

Introduction

When sound waves are collected, converted to vibrations, and sent to the brain as impulses, you can hear. Hearing loss is characterized according to which portion of the process is impacted. The external or middle ear issues cause a conductive hearing loss. A surgical repair may sometimes help to enhance hearing. Hearing loss induced by disorders with the inner ear and hearing nerve is sensorineural hearing loss. Many of these people might benefit from a cochlear

implant. These devices are surgically implanted and stimulate the hearing nerve directly, enhancing the capacity to hear and interpret speech. (*Types of hearing impairment*, 2018)

The following factors may contribute to sensorineural hearing loss:

- Illnesses.
- Drugs are harmful to one's hearing.
- A family history of hearing loss.
- Aging.
- A direct hit to the skull.



- A difficulty with the inner ear's development.
- Surround yourself with loud sounds or explosions. (American Speech-Language-Hearing Association, 2009)

Approximately 466 million people in universal are suffering by hearing loss, according to the World Health Organization (Ma et al., 2019). In the United States, roughly 66,000 new instances of sudden sensorineural hearing loss are diagnosed each year (Chandrasekhar et al., 2019). Hearing loss is caused by the degeneration of sensual hair cells, main auditory neurons, and synaptic linkages to cells themselves in the cochlea are known as sensorineural. (Ma et al., 2019)

The particular requirements of neurotrophin and other hearing loss treatments, such as high dosage, long-term management, localized or cell-specific directing, and procedures for their safe and practical conveyance to the cochlea, are being fulfilled by drug treatment delivery systems (Suzuki et al., 2016)(Du et al., 2018). Drug-based treatments based on neurotrophic factors are among the most promising for healing the ribbon synapse after noise exposure and avoiding early auditory neuron loss and regeneration of auditory neuron fibres following acute hearing loss. Using novel biomaterials, large doses of medicine may be given to the cochlea, with slow-release features that are valuable in treating hearing loss. With promising findings, new gene therapy approaches are addressing the need for cell selectivity and high effectiveness in treating both hereditary and acquired deafness (Gao et al., 2017).

Metabolic syndrome manifests as high blood pressure, abdominal obesity, high cholesterol, and diabetes. Stroke, myocardial infarction, cardiovascular mortality, and diabetes have all been related to the metabolic syndrome. Aghazadeh Attari and colleagues (Aghazadeh-Attari et al, 2017)

Literature Review

Liberman & Kujawa's research showed that exposure to loud noise, ototoxic medications, and aging are all typical reasons of hearing damage in humans, and sensory hair cells are often damaged, resulting in raised thresholds on the clinical audiogram. (Liberman & Kujawa, 2017) These therapies aim to decrease inner ear inflammation while simultaneously improving blood flow and oxygenation. For these purposes, steroids, vasodilators, plasma expanders, antiviral, and diuretic medications are used in various combinations. Hyperbaric oxygen (HBO) and low-molecular-weight heparin (LMWH) have also been demonstrated to have therapeutic benefits. (Edizer et al., 2015)

Large dose; long-term administration, targeted or cell-specific targeting, and safe and practical transport to the cochlea are some of the particular needs of neurotrophin and other hearing loss therapies. Treatments for inherited and acquired hearing loss using new gene therapy technologies have shown promising outcomes in terms of cell selectivity and efficacy. The cochlear implant is used in conjunction with a variety of biomaterials and cell therapies to guarantee that the main neurons get therapeutic benefit during electrical stimulation. (Ma et al., 2019)



Rim et al., in 2021, studied the link in hearing loss and metabolic syndrome. Hearing loss was linked to a higher number of metabolic syndrome diagnostic variables, particularly in those who had four of them: high blood pressure, obesity, high triglyceride levels, and a high fasting blood glucose level. This research emphasizes the necessity of metabolic syndrome regulation in treating hearing loss. (Rim et al., 2021) Chien et al. showed in 2015 diabetes mellitus, hypertension, and hyperlipidemia have all been linked to sudden sensorineural hearing loss. These findings imply that metabolic syndrome is a separate threat for abrupt sensorineural hearing issues in Taiwan. (Chien et al., 2015)

Relevance

The literature elaborated above is research articles and research reviews related to the different hearing loss treatments. It also describes the relation of this hearing loss with metabolic syndrome. The clinical efficiency of these treatments is also explained.

Purpose

The research goal is to estimate the efficiency of several treatments of sensorineural hearing loss. The link between sensorineural hearing loss and metabolic syndrome is explained.

Method

Clinical Trials Registry of the National Institutes of Health (NIH), PubMed, and MEDLINE collect data. Candidates hearing loss therapy were discovered via a search of the NIH Clinical Trials registry, and supportive papers were obtained from MEDLINE/PubMed. The clinical results, treatment mechanisms, and proof-of-concept were all evaluated. There were 22

ongoing clinical drug studies in United States, and six theoretically medicinal compounds were examined. Four of the six compounds examined included mechanisms for reducing oxidative stress pathways, which contribute to inner damage. One of the left over therapies attempted to regulate the cell death. The last treatment was a unique cell replacement therapy strategy that included the introduction of a transcription factor that stimulates hair cell regeneration.

Interventional clinical studies in phase 1 or later that evaluated sensorineural hearing loss were included. Steroids, natural supplements such as Gingko Biloba, therapies for illnesses other than sensorineural hearing loss (e.g., Meniere's disease, cerumen impaction, autoimmune inner ear disease, congenital CMV infection), and studies that were terminated were also eliminated.

Results

There were 22 active medical studies recorded in the United States. We looked at six possibly medicinal compounds from the 22 ongoing clinical studies. For each chemical, sufficient fundamental science and clinical data were acquired to enable a fair debate on the therapy's basis and justification. Four of the six chemicals examined dealt with methods for preventing oxidative stress, which is thought to cause auditory cell death. The final treatment was a exclusive cell replacement technique to familiarize a transcription factor that causes hair cell regeneration.

Targeting cell death ways and oxidant stresses impact on cochlear sensual neuroepithelium seems to be recurrent subject in latest clinical studies filed in US.



Furthermore, if a virus-delivered cell replacement treatment is shown to be safe and effective, it will be the first of its type. There are still significant obstacles to overcome in getting these medicines to marketplace. Furthermore, when new mechanisms associated with hearing defeat, like an immunological reaction and the failure of synaptic links, are discovered, new targets become accessible.

Conclusion

Global hearing loss is a concern. In humans, sensual hair cells are usually damaged and they do not normally heal. To combat this, many medical treatments are utilized. Drug therapy, cell replacement and gene therapy are the new treatments used worldwide to combat hearing loss. One of the methods is delivery cochlear cells with DNA coding

neurotrophic proteins. In the circular window of the cochlea, hydrogel biomaterials are being explored for non-invasive medicine delivery. SGN repopulation or neurotrophin provision for SGN defense after hearing loss has also been studied. Advances in drug treatment strategies help to transfer pre-clinical results into clinical trials. The relationship between hearing loss and metabolic syndrome is also discussed. Metabolic syndrome is directly associated with possibility of hearing defect.

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FERROELECTRIC PROPERTIES OF BARIUM TITANATE

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ABSTRACT

The paper presents various physical properties of barium titanate. The ferroelectric properties of this dielectric have been studied. Measurement graphs shown

Barium titanate (BaTiO_3) is a dielectric, the chemical bonds in it are ionic-covalent. It crystallizes into a perovskite structure (Fig. 1), in which each

titanium atom is surrounded by six oxygen atoms, each barium atom by twelve oxygen atoms, and an oxygen atom by two titanium atoms.

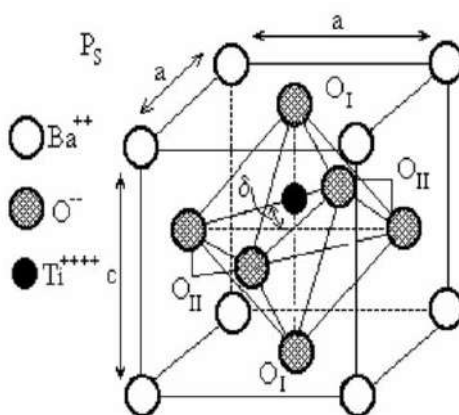


Fig.1 TiBaO_3 unit cell (perovskite type)

Oxygen atoms are located at the vertices of regular octahedra, in the center of which are titanium atoms. Sometimes (assuming a predominantly ionic bond), the BaTiO_3 structure is presented as the densest cubic packing formed by O^{2-} and Ba^{2+} ions, with Ti^{4+} ions located in some of its octahedral voids. There are four octahedral and eight

tetrahedral voids per BaTiO_3 unit cell. The Ti^{4+} ion occupies one of the octahedral voids formed by oxygen ions. Barium titanate at room temperature has a polycrystalline perovskite structure. The displacement of Ti, OI, and OII ions along the Z axis by 0.014s, -0.023s, and -0.04s, respectively, is the cause of spontaneous

polarization $P_s \approx 0.25 \text{ C/m}^2$. Figure 2 shows the temperature dependence of ϵ and $\text{tg}\delta$, as well as the course of dependence $1/\epsilon(T)$ and the change in the crystal structure during the thermal transition from the ferroelectric phase to the paraelectric phase. It should be noted that each

structural transition is accompanied by a phase transition at the Curie point $T'_K = 400^\circ\text{C}$. For pure BaTiO_3 , the temperature T_K is 12° lower. The Curie - Weiss constant for barium titanate is $C = 1.2 \cdot 10^5 \text{ K}$, and the value $\epsilon_{\text{max}} = 10^5$ (Fig. 2).

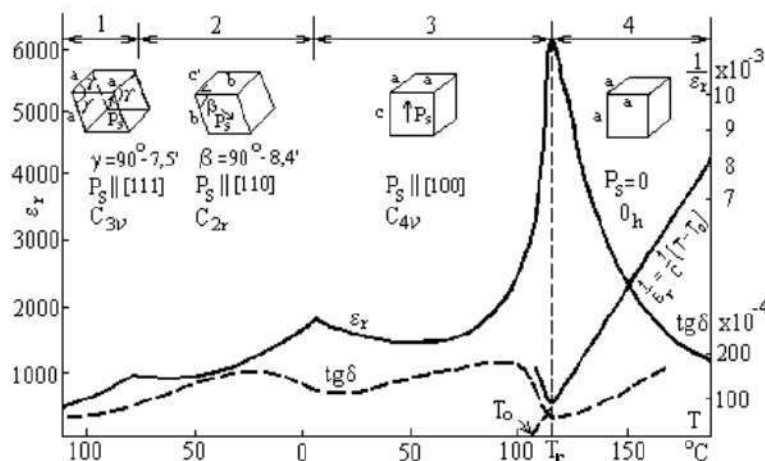


Fig. 2 Temperature dependence of permittivity ϵ and dielectric loss tangent $\text{tg}\delta$ of BaTiO_3 ceramics. T_K - Curie point, T_o - Curie - Weiss temperature, 2 - rhombic phase, 1 - rhombohedral phase, 3 - tetragonal phase, 4 - cubic phase

The transition to a non-polarized state will occur when it is heated to 400 K, with a change in the lattice parameters (Fig. 3). Each elementary cell has an electric moment, i.e. the centers of gravity of the electric charges of the particles entering the cell do not coincide.

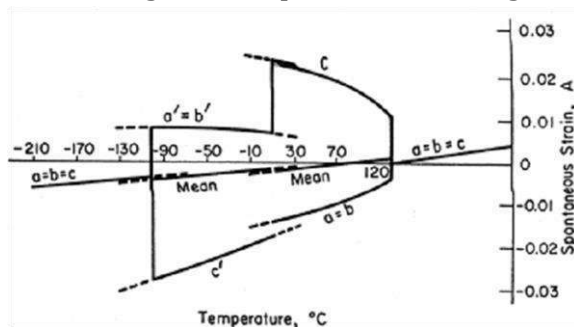


Fig.3 Graph of changes in the parameters of the crystal lattice in various polymorphic structures

TEMPERATURE DEPENDENCE OF PROPERTIES

The interaction of individual cells with each other in a ferroelectric is such that the ordered arrangement of cells with identically directed electric moments is the

most stable. The orientation of the electric moments of many cells in one direction leads to the formation in the crystal of regions or domains that are uniformly polarized.

The total polarization of a ferroelectric in an external field consists of two processes: an increase in the induced

polarization and a change in the specific weight of domains whose spontaneous momentum is oriented in the direction of the external field. The establishment of full polarization in a strong field is a complex process, since in the general case both spontaneous P_{sp} and induced P_{ind} polarization are nonlinear functions of the field strength. In areas where the induced

polarization can be considered a linear function of the field strength, the division of polarizations is carried out as follows: the saturation branch of the hysteresis loop (Fig. 4) is extrapolated to the field value equal to zero, and then the section AB corresponds to the induced, and the section BO corresponds to the spontaneous polarization.

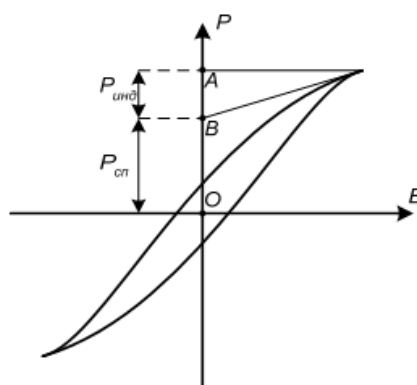


Fig.4 Hysteresis loop

At a certain temperature, spontaneous polarization and the associated hysteresis loop disappear.

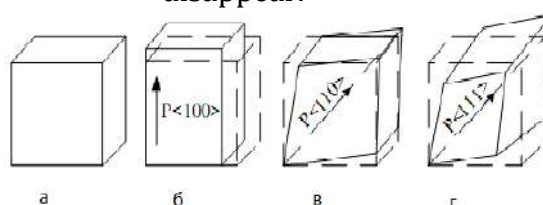


Fig.5 Unit cells of four $BaTiO_3$ phases; a - cubic unit cell, stable above 400 K; b - tetragonal, stable in the temperature range 280-400 K; c - rhombic, stable in the temperature range 180-250 K; d - rhombohedral, stable below 180 K. The primes indicate the initial cubic phase.

In the range of 273-295 K, the $BaTiO_3$ cell is tetragonal (Fig. 5 b), at 400 K a phase transition occurs and the tetragonal cell turns into a cubic one, so that at 400 K it is already cubic (Fig. 5,a), and the domains are destroyed due to thermal movement. When cooled to 183 K, the second phase transition is observed for $BaTiO_3$, and the cell turns from tetragonal to rhombic (Fig. 5, c), and at temperatures below 183 K, a phase transition occurs, at which the cell turns into monoclinic or triclinic. (Fig. 5,d)

But these phase transitions do not destroy the domain structure, although the spontaneous polarization vectors change their direction. In a tetragonal cell, which differs slightly from a cubic one, the ratio of the axes $c/a = 1.01$, and the spontaneous polarization vector is directed along the c axis. Below 273 K for a rhombic grating, the spontaneous polarization vector is directed along the diagonal of the unit cell. After the next phase transition, the spontaneous

polarization vector is directed along the bulk diagonal.

In the tetragonal cell of BaTiO_3 , the ferroelectric axis is directed along the c axis. The direction perpendicular to it is denoted by a . The permittivity is a tensor,

and for BaTiO_3 the largest changes in the region of phase transitions are observed for the ϵ_a component (Fig. 6). But at the Curie point, ϵ_a and ϵ_c merge, i.e. these components are equal.

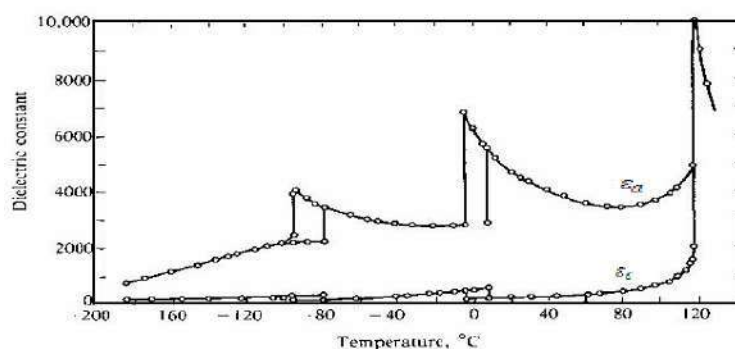


Fig.6 Temperature dependence of dielectric permittivity of BaTiO_3 , measured in the direction of the ferroelectric axis c and axis perpendicular to it a

This dependence for barium titanate cannot be considered as a typical graph for the components of ϵ tensors in any ferroelectrics. For Rochelle salt, which has two Curie points (at 255 K and 296 K), between which spontaneous polarization is observed, the ferroelectric axis is the a axis of the monoclinic structure. It is only along

this axis that the ferroelectric properties of $\text{NaKC}_4\text{H}_4\text{O}_6\text{H}_2\text{O}$ are revealed. In the direction of the axes b and c , ferroelectric properties do not appear, and the permittivities ϵ_b and ϵ_c are only a few units (Fig. 7).

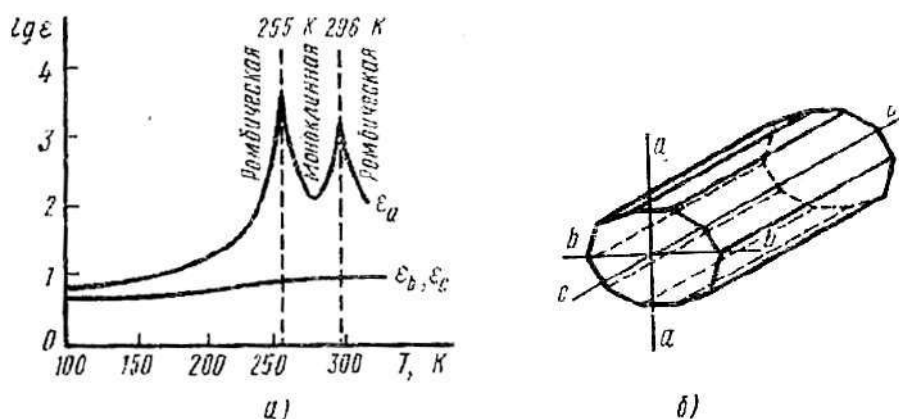


Fig.7 Dependence of the permittivity ϵ_a along the ferroelectric axis and permeabilities ϵ_b and ϵ_c along the axes b and c on temperature (a) and the location of these axes (b) in a salt crystal

ϵ also depends on BaTiO_3 impurities (Fig. 8)

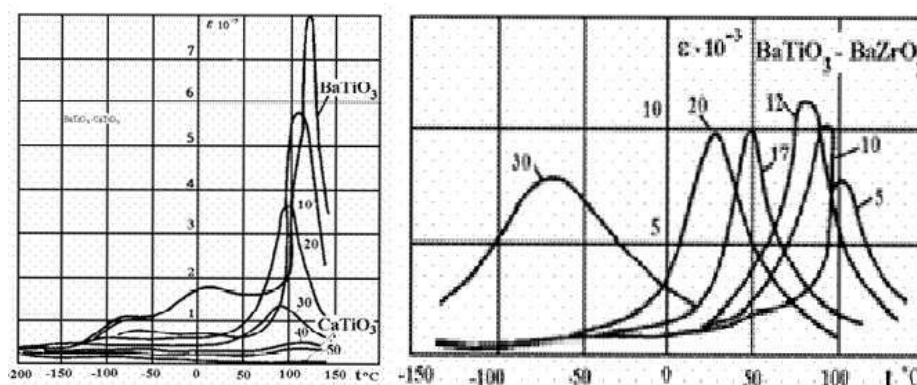


Fig.8 Dependence of dielectric constant of barium titanate on additives

The temperature dependence in the non-polar modification or the paraelectric state can be represented by the Curie-Weiss law:

$$\varepsilon = \frac{C}{T - T_K} \quad (1)$$

where ε is the magnetic susceptibility;

C is the Curie constant depending on the substance;

T is the absolute temperature in kelvins;

T_K - Curie temperature, K.

For barium titanate, the absolute values of C vary greatly among different researchers, which is associated with different technologies for obtaining samples. Often take $C = 10^5$ K.

The properties of barium titanate with phase transition 1 (PT1) close to phase transition 2 (PT2) can be described similarly to the properties of ferroelectrics with PT2 using the thermodynamic theory. According to this theory, ferroelectrics with PT1 in the PT temperature range exhibit instability and a dielectric hysteresis loop. The Curie-Weiss law has the same analytical form (1), however, it exhibits features. If for PT2 the transition occurs at $T = T_K$ and $\alpha = 0$, then for PT1 $\alpha \neq 0$.

On fig. 9 shows the temperature dependences of P_s and ε in ferroelectrics with PT1.

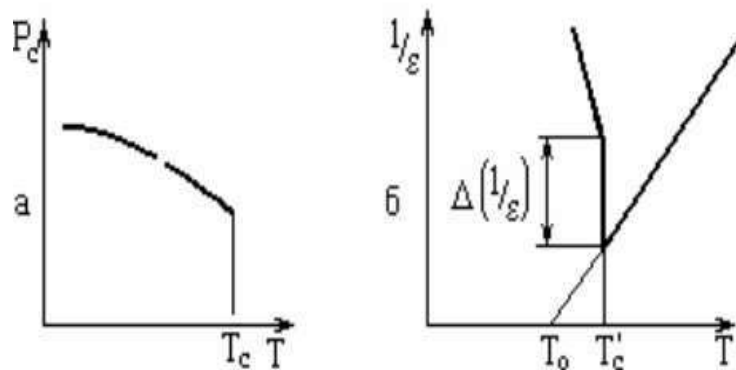


Fig.9 Temperature dependence of spontaneous polarization (a) and inverse permittivity (b) in ferroelectrics with PT2. T'_K - Curie point, T_K - Curie - Weiss temperature. The Curie point characterizes the phase transition temperature of ferroelectrics of



the 1st kind. The Curie - Weiss temperature, $T_0 = T_k$, shows the temperature shift of PT1 compared to PT2.

CONCLUSION

During the analysis of the study of various authors, it turned out that barium titanate is an unusual ferroelectric, since it has properties that are characteristic only of it. In particular, of greatest interest is its large dielectric constant. And along with the desire of mankind to make all means, in particular, communications, as easy and small as possible, its characteristics as the basis for semiconductor devices are of particular interest to mankind. Therefore, it was relevant to study it at the micro - and even nano - levels.

Scientists from different countries, starting from the very moment of the discovery of this substance, have been conducting intensive research to identify the presence of various properties. These

studies made it possible to distinguish this ferroelectric into a special class. Since he made a mini-revolution in the field of dielectrics. The reason for this was the presence of a large coefficient of dielectric constant (10 times) than that of previously known substances. Also, the peculiar dependence of the dielectric constant on various factors (temperature, impurities, frequency, intensity) indicates that its polarization has some features. For example, BaTiO_3 has the highest Curie temperature among other ferroelectrics. Such features, as well as the simplicity of the crystal lattice and the easy method of obtaining, by simple firing, open up many prospects for its application in technology. And these perspectives are already applied. In the future, this connection is still waiting for its significant application in the booming computer industry.

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БИОКИМЁ ФАНИНИНГ БОШҚА ФАНЛАР БИЛАН АЛОҚАСИ

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KALIT SO'ZLAR

Биокимё ютуқлари,
олий таълим тизими,
методик жараёнлар,
Касбий маҳорат, чет эл
тажрибаси,

ANNOTATSIYA

Биокимё фанини мутахассислик фанлари билан интеграциялаш асосида ўқитиш самарадорлигини ошириш (Тиббиёт институтлари таълим йўналишлари мисолида).

Диссертация мавзусининг долзарблиги ва зарурати. Расмий маълумотларга қараганда инновация фаолиятининг ютуқларидан, интернет-ресурс ва веб-сайтлардан фойдаланиш талабаларни келажакда ўз соҳаси бўйича жамиятда ўз ўрнини топишда муҳим аҳамиятга эга. Биокимё фанини ўқитиш, ташкил қилиш ва такомиллаштириш ўзига хос ижодий ёндашишни талаб этади, чунки таълим жараёнини бундай ташкил этиш бўлажак шифокорлар касбий тайёргарлигини оширади. Биокимё фанини яхши билиш шифокорлар учун касбий фаолияти муҳим ўрин тутди. Биокимё фанини чуқур ўрганиш келгусида ўрганадиган клиник фанлар учун асос бўлиб ҳисобланади. Биокимё фанини ўқитишни такомиллаштириш учун инновацион ёндашиш,

мультимедиа тақдимотлар, электрон дарсликлар ва талабаларга тарқатиладиган тарқатма материаллар ўқув дастурини етарли даражада ўзлаштириш имконини беради. Биокимё фанини ўқитишни оптималлаштириш бўйича иккита усул: идрок этиш ва ёдлашни осонлаштириш талабалар томонидан маълумотларни қабул қилиш, молекуляр механизмларни тўғри тушуниш ва бу механизмлар организмни нормал ва патологик шароитларда қандай ўзгаришини англаб етиши лозим. Маъруза машғулотлари давомида талабаларга назарий биокимёнинг тиббий жиҳатларини тўлиқ етказиш, бўлажак шифокор учун бунга англаш зарурлиги тушунтирилиши лозим.

Жаҳон таълим тизимида фан ва инновация фаолиятининг ютуқларидан



кенг фойдаланиш, жамият ва давлат ҳаётининг барча соҳаларини изчил ва барқарор ривожлантириш мамлакатнинг муносиб келажагини барпо этишнинг муҳим омили бўлиб бормоқда. Россия, Англия, Жанубий Корея, Япония каби давлатларда юқори касбий компетентлиликка эга, рақобатбардош кадрлар тайёрлашга ривожланишнинг асосий йўналиши сифатида қаралиб, таълимда инновацияларни, шу жумладан, ўқитишнинг замонавий, интерактив ва ижодий услубларини кенг жорий этилиши таъминламоқда. Бу эса ўз навбатида бўлажак мутахассисларда назарий билимлардан касбий амалиётда муваффақиятли фойдаланиш компетенцияларини шакллантириш, касбий фаолиятда ўз ташаббусларини рўёбга чиқаришга шароит яратувчи таълим муҳитини жорий қилишда муҳим аҳамиятга эга.

Ўзбекистон Республикаси Президентининг 2017 йил 7 февралдаги “Ўзбекистон Республикасини янада ривожлантириш бўйича Ҳаракатлар стратегияси тўғрисида”ги ПФ-4947-сонли фармони, 2017 йил 20 апрелдаги “Олий таълим тизимини янада ривожлантириш чора-тадбирлари тўғрисида”ги ПҚ-2909-сонли, 2017 йил 29 ноябрдаги “Ўзбекистон Республикаси Инновацион ривожланиш вазирлигини ташкил этиш тўғрисида”ги ПФ-5264-сонли қарорлари, 2018 йил 25 январдаги “Умумий ўрта, ўрта махсус ва касб-хунар таълими тизимини тубдан такомиллаштириш чора-тадбирлари тўғрисида”ги ПФ-5313-сонли Фармони ва бошқа ушбу соҳага тегишли меъёрий-ҳуқуқий ҳужжатларда белгилаб

берилган вазифаларни амалга оширишда мазкур диссертация тадқиқоти муайян даражада хизмат қилади

Тадқиқотнинг республика фан ва технологиялари ривожланишининг устувор йўналишларига мослиги. Диссертация тадқиқоти республика фан ва технологиялар ривожланишининг I. «Демократик ва ҳуқуқий жамиятни маънавий-ахлоқий ва маданий ривожлантириш, инновацион иқтисодиётни шакллантириш» устувор йўналишига мувофиқ бажарилган.

Муаммонинг ўрганилганлик даражаси. Тиббиёт ва биологияга оид фанларни ўқитишни такомиллаштириш, ўқитишда фанлараро интеграциядан фойдаланиш бўйича мавжуд илмий нашрларнинг таҳлили шуни кўрсатадики, таълим жараёни самарадорлигини ошириш масаласига жаҳон миқёсида инновацион технологиялардан фойдаланиш сифатида эътибор берилган ва сезиларли натижаларга эришилган. Жумладан, Россиялик олимлардан Н.С.Антонов, Г.И.Батурина, М.Н.Берулава, В.С.Елагина, Л.А.Жукова, В.И.Звягинский, Д.В.Ровкин, В.А.Сластенин, Г.В.Федорец, Н.К.Чапаевлар ўқитишда интеграллашган ёндашувлар борасида изланишлар олиб боришган.

Умумтаълим мактаб фанларини интеграллашган усулда ўқитиш бўйича Н.С.Антонов, Г.И.Батурина, В.И.Звягинский, В.С.Елагина, Л.А.Жуков, А.Л.Семенов ва бошқалар изланишлар олиб борган.

Биология ўқитувчиларининг методик тайёргарлигини ошириш



масалалари МДХ мамлакатларида И.М. Гапоненко, Т.В. Боровских, М.Б.Дьякова, О.С.Зайцев, С.В.Иноземцева, Н.Е.Кузнецова, Л.Г.Таскаева, Г.М.Чернобельская, Д.П.Еригин, Э.В.Тулакова, М.А.Хачатуриан, Б.Д.Березин, Э.Г.Злотников, В.С.Полосин, М.А.Шаталов, Л.А.Жарких, Е.К.Долгань каби олимлар томонидан турли даражада ўрганилган.

Хорижий давлатларда биология таълими жараёнига илғор педагогик ва ахборот технологияларини жорий этиш, компетенциявий ёндошув асосида такомиллаштириш, методик тайёргарликни орттириш соҳасида N.V.Gorbunova ва E.V.Mokeyeva, A.V.Dubakov, I.O.Igropulo, A.A.Lyubotinsky, E.E.Nepochatyh, A.N.Pechnikov, A.V.Prenzov, O.A.Plaksina ва T.A.Matveyeva, M.K.Smith, A. Sorgo, K.Steffens, A.Sursock, J.H. Hageman ва бошқалар тадқиқот олиб борган.

Республикамизда М.С.Усмонова “Бўлажак биология ўқитувчиларининг методик тайёргарлигини такомиллаштириш” мавзусида, У.Б.Баходирова “Микробиология фанини ўқитишда виртуал таълим технологияларидан фойдаланиш методикасини такомиллаштириш (педагогика олий таълим муассасалари мисолида) мавзусида, Н.И.Камолова “Олий таълим муассасаларида биокимё фанини ўқитиш методикасини такомиллаштириш” мавзусида тадқиқотлар олиб боришган.

Адабиётлар таҳлили шуни кўрсатадики, республикамиз тиббиёт олий таълим муассасаларида биокимё фанини интеграциялашган усулда

ўқитиш масалалари етарли даражада тадқиқ этилмаган.

Тадқиқотнинг диссертация бажарилган илмий-тадқиқот институтининг илмий-тадқиқот ишлари режалари билан боғлиқлиги.

Тадқиқот мақсади Тиббиёт йўналишларида биокимё фанини ўзлаштириш самарадорлигини ошириш бўйича мутахассислик фанлари билан интеграциялашган ҳолда ўқитиш усуллари ишлаб чиқиш ва таълим жараёнига татбиқ этиш.

Тадқиқот вазифалари:

- мавзуга оид педагогик-психологик адабиётлар, илмий тадқиқот ишларини ўрганиш, амалдаги малака талаблари ва таълим мазмунини қиёсий таҳлил қилиш;

- тиббиёт олий таълим муассасаларида мутахассислик ва бошқа фанларни ўқитишда талабалар фаоллигини таъминлашнинг педагогик-психологик механизмлари ишлаб чиқиш;

- тиббиёт йўналишларида биокимё фанини ўзлаштириш самарадорлигини ошириш бўйича мутахассислик фанлари билан интеграциялашган ҳолда ўқитиш усуллари ишлаб чиқиш;

- тиббиёт йўналишларида биокимё фанини ўзлаштириш самарадорлигини оширишда мутахассислик фанлари билан интеграциялашган ҳолда ишлаб чиқилган ўқитиш усуллари бўйича тажриба-синов ишларини ўтказиш, самарадорлик даражасини аниқлаш ва илмий асосланган тавсиялар ишлаб чиқиш.

Тадқиқотнинг объекти тиббиёт таълим йўналишларида биокимё фанини мутахассислик фанлари билан



интеграциялаш асосида ўқитиш жараёни.

Тадқиқотнинг предмети тиббиёт таълим йўналишларида биокимё фанини мутахассислик фанлари билан интеграциялаш асосида ўқитишнинг шакли, восита ва усуллари.

Тадқиқотнинг усуллари.

Тадқиқот мавзусига оид психологик-педагогик, ўқув-методик манбаларни таҳлил қилиш, қиёсий таҳлил, анкета, савол-жавоб, суҳбат, умумлаштириш, педагогик прогностика, педагогик тажриба-синов ишини ўтказиш ва олинган маълумотларни математик-статистик қайта ишлаш методларидан фойдаланилади.

Тадқиқотнинг илмий янгилиги мавзуга оид педагогик-психологик адабиётлар, илмий тадқиқот ишларини ўрганиш, амалдаги малака талаблари ва таълим мазмунини қиёсий таҳлил қилинади;

- тиббиёт олий таълим муассасаларида мутахассислик ва бошқа фанларни ўқитишда талабалар фаоллигини таъминлашнинг педагогик-психологик механизмлари ишлаб чиқилади;

- тиббиёт йўналишларида биокимё фанини ўзлаштириш самарадорлигини ошириш бўйича мутахассислик фанлари билан интеграциялашган ҳолда ўқитиш усуллари ишлаб чиқилади;

Тадқиқотнинг амалий натижалари тиббиёт йўналишларида биокимё

фанини ўзлаштириш самарадорлигини оширишда мутахассислик фанлари билан интеграциялашган ҳолда ишлаб чиқилган ўқитиш усуллари бўйича тажриба-синов ишларини ўтказиш, самарадорлик даражасини аниқлаш ва илмий асосланган тавсиялар ишлаб чиқилади.

Тадқиқот натижаларининг ишончлилиги муаммога оид фалсафий, социологик, педагогик ва психологик ёндашувлар ва амалга оширилган усуллар, фойдаланилган назарий ва амалий маълумотларнинг расмий манбалардан олинганлиги, аналитик ва экспериментал ишланмаларнинг самарадорлиги математик статистика методлари ёрдамида асослангани ҳамда олинган натижалар ваколатли ташкилотлар томонидан тасдиқлангани билан изоҳланади.

Диссертациянинг илмий ва амалий аҳамияти: *(тадқиқот жараёнида шакллантирилади)*

Тадқиқот натижаларининг жорий қилиниши. *(тадқиқот якунида шакллантирилади)*

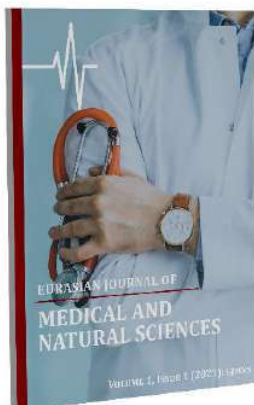
Тадқиқот натижаларининг апробацияси: *(тадқиқот жараёнида шакллантирилади)*

Тадқиқот натижаларининг эълон қилинганлиги *(тадқиқот жараёнида амалга оширилади)*

Диссертациянинг тузилиши ва ҳажми: *(тадқиқот якунида шакллантирилади)*

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STANDARD AND SPECIAL AMINO ACID SOLUTIONS IN THE TREATMENT OF PATIENTS WITH LIVER FAILURE

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hepatic encephalopathy; synbiotics; branched chain amino acids; trail making test; inhibitory control test; cognition.

1. Introduction

Hepatic encephalopathy (HE) is a term that describes a wide range of nonspecific, potentially reversible, neurophysiological changes associated with hepatic insufficiency in individuals with chronic liver disease [1]. Its occurrence relates to the progression and severity of hepatic cirrhosis and portosystemic shunting [1]. HE may be minimal, episodic, or persistent [2]. Episodic HE may be spontaneous without an identifiable precipitant, or result from a number of clinical changes which include gastrointestinal bleeding, infection, constipation, hypoglycaemia, or hyponatremia [3]. Persistent HE is associated with chronic alterations in cognitive and motor function, which may range from mild or severe [3].

The nomenclature and classification of HE have been refined and current schema

ABSTRACT

Hepatic encephalopathy (HE) is common in patients with cirrhosis and is characterised by reduced hepatic ammonia clearance. This is accompanied by alterations in gut bacteria that may be ameliorated with synbiotics (pro- and prebiotics). Branched chain amino acids (BCAAs) are thought to have a role in the detoxification of ammonia. We investigated the effects of the administration of synbiotics and/or BCAAs in treating HE.

classify HE as either covert or overt HE [3]. Covert HE is estimated to occur in 30–85% of patients with cirrhosis and is characterised by mild cognitive abnormalities [4]. Overt HE, which is characterised by more severely impaired mental status and neuromotor function, is associated with reduced quality of life, increased somnolence, increased frequency of hospital admissions, and increased mortality [4]. It occurs in 30–50% of patients with decompensated cirrhosis [4]. Both covert and overt HE present a significant burden for caregivers and health care systems [5].

Overt HE occurs in 30–40% of patients with cirrhosis [3]. Persistent or repeated episodes of overt HE may result in cumulative deficits in working memory, response inhibition, and learning [6], which may not be fully resolved following liver



transplantation [7]. A number of neuropsychological tests have been developed to detect deficits that characterise hepatic encephalopathy [2]. They include, but are not limited to, the Inhibitory Control Test (ICT) [8] and the Trail Making Test (TMT) [9].

Ammonia has been considered both a factor in the development of HE and a marker of HE, but rising serum ammonia concentrations do not correlate with the symptoms of HE [10]. Ammonia homeostasis primarily involves the liver [10], but ammonia is also produced by enterocytes and colonic bacteria [11]. Elevated levels of circulating ammonia induce neutrophil dysfunction, resulting in a reduced inflammatory response, increased oxidative stress [12], altered neurotransmission, increased brain oedema, and astrocyte swelling [13]. It is generally accepted that the development of HE is, in part, a consequence of a systemic inflammatory state with increased circulating levels of ammonia arising from dysbiosis and alterations in gut permeability [12]

Since the late 1980s, when the concept of the gut–liver–brain axis was first introduced, there has been a growing awareness and acceptance of the interplay between the gut, the composition of the gut bacteria, the liver, and the brain [14]. The gut epithelium is a highly regulated selective natural barrier [15]. There is a causal relationship between alterations in bile acid production, reduced gut bacterial diversity and richness, luminal dysbiosis, cirrhosis severity, and cognitive performance [12,13,16].

A functional dysbiosis has been identified in patients with cirrhosis, which was associated with increased markers of

systemic inflammation and HE [17]. Supplementation with probiotics, prebiotics, or both may promote the growth and diversity of beneficial bacteria and ultimately may result in an improvement in brain function and cognition [12].

A Cochrane review of 21 trials of probiotic supplementation in patients with hepatic encephalopathy concluded that probiotic use was associated with an improvement in the symptoms of HE, a delay in the development of overt HE, and an improvement in the quality of life, compared to placebo or no intervention. Importantly, there were no reports of septicaemia associated with probiotic use [18].

A consequence of the nutritional changes accompanying chronic liver disease [19] is a reduction in circulating levels of branched chain amino acids (BCAA: leucine, isoleucine, and valine) and an increase in circulating levels of the aromatic amino acids (phenylalanine, tyrosine, and tryptophan) [20]. BCAAs improve glucose metabolism, promote protein synthesis, inhibit proteolysis in skeletal muscle, and are involved in ammonia detoxification via the glutamate/glutamine pathway which requires ammonia [21]. A recent Cochrane review supports the beneficial use of oral BCAA supplementation in reducing HE [22]. The principle aim of this pilot study was to investigate the effect of oral supplementation with synbiotics and/or BCAAs on HE in patients who were receiving ongoing treatment with lactulose. Additional outcomes included the effect of supplementation on physiological markers of infection, macronutrient intakes, depression, anxiety and stress, and body composition.

2. Materials and Methods



2.1. *Ethics and Consent*

Signed, informed consent was obtained from all participants prior to enrolment and all research was conducted in accordance the Declaration of Helsinki and with the approval of the Sydney Local Health District Human Research Ethics Committee (RPAH zone: X09-006 and HREC/09/RPAH/5). The investigation was registered with the Australian New Zealand Clinical Trials register: ACTRN12610001021066.

2.2. *Participant Selection*

Adult patients with hepatic cirrhosis and a history of HE (West Haven 1,2) [23] who attended a liver clinic were invited to participate in a study which investigated the effect of supplementation with synbiotics, BCAAs, combined synbiotics and BCAAs, or placebo. Participants were required to be on daily lactulose therapy, abstinent from alcohol and intravenous drug use for at least 3 months prior to entry to the study, and, if on methadone, were required to be dose-stable for a minimum of 3 months prior to study entry. Individuals with coeliac disease or a history of gluten sensitivity were excluded from the study due to the composition of the synbiotics. Potential participants were excluded if they were currently using a probiotic or if they were taking rifaximin, an antibiotic now widely used in the management of HE [24], or if random blood glucose levels were $\geq 15 \text{ mmol/L}$. At the

time of the study design and initiation, rifaximin was not available in Australia for the treatment of HE and it only became available during the period of study recruitment. At the time of recruitment to the study, availability of microbiota analysis of stool samples and measurement of intestinal epithelial permeability was not available.

2.3. *Psychometric Testing Methods*

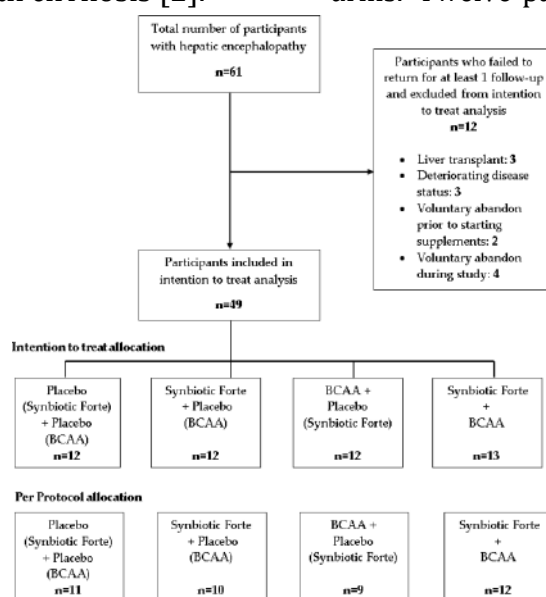
Prior to randomisation, hepatic encephalopathy was confirmed by the treating hepatologist and documented regular lactulose use. HE was further confirmed by psychometric testing which included both the computerised ICT [8] and pencil-paper TMT [9]. The ICT is a computerised neuropsychological test of working memory, attention, processing speed, and inhibition or self-control [8]. The TMT is a simple pencil-paper test which is widely used to assess cognitive processes including attention, visual search and scanning, sequencing and shifting, graphomotor speed, abstraction, flexibility, ability to execute and modify a plan of action, and the ability to maintain two trains of thought simultaneously [9,25,26]. The results of the ICT were expressed as number of targets, target accuracy, number of non-inhibited responses or lures, and weighted lures [9,27]. TMT results were expressed in seconds and compared with an Australian normative sample [28].



Inhibition is one of the most frequently used cognitive functions and can be learned, trained, and improved [29]. Disinhibition on a cognitive level will make it difficult to inhibit distracting stimuli [29]. Testing for attention is as important as testing for inhibition to diagnose cognitive dysfunction in patients with cirrhosis [2].

and placebo for BCAA, placebo for Synbiotic Forte and BCAA or placebo for Synbiotic Forte and placebo for BCAA (Figure 1).

Figure 1. Study Design and Patient Allocation. Figure 1 outlines the allocation of eligible participants to the 4 treatment arms. Twelve participants did not return for



As the TMT and ICT responses were major measures of cognition and executive functioning, the primary investigator explained both the TMT and the ICT in great detail prior to participants commencing the tests. Some participants required more than 1 practice run to confirm that they understood the tasks.

2.4. Participant Allocation

As this was a pilot study to obtain preliminary data to justify further definitive investigations of these treatments, a power calculation was not considered. The study aimed to recruit 80 participants with even allocation ($n = 20$) to each intervention. Following informed, signed consent, participants were randomly allocated to one of four arms [30] to receive either: Synbiotic 2000 Forte™ and branched chain amino acids (BCAA), Synbiotic 2000 Forte™

at least 1 follow-up assessment and were not be included in the intention to treat analysis for the reasons indicated. BCAA, branched chain amino acids. On recruitment, participants were invited to randomly select a sealed, opaque envelope from a box which contained all treatments and were subsequently allocated to the randomised intervention. The synbiotic supplement or placebo was taken in the morning and the BCAA supplement or placebo was taken at night before bed. All participants were required to use a standard high protein, high calorie sip supplement which provided 18 g protein and 250 kcals in addition to their usual diet.

2.5. Interventions Assessed

Each 10 g sachet of Synbiotic 2000 Forte™ contained a mixture of 4 probiotics (Lactobacillus paracasei ssp paracasei 10



$\times 10^{11}$, *Lactobacillus plantarum* 10×10^{11} , *Leuconostoc mesenteroides* 1×10^{11} , and *Pediococcus pentosaceus* 10×10^{11}) and 4 fibres (2.5 g oat bran, 2.5 g pectin, 2.5 g resistant starch, and 2.5 g inulin). The placebo for synbiotics contained 10 g crystalline starch. The BCAA supplement used was Hepatamine® and each sachet provided 2.325 g leucine, 1.875 g isoleucine, 1.8 g valine, and 180 kcals. The placebo for Hepatamine was a mixture of an orange flavoured powdered drink base and glucose which was isocaloric and provided 180 kcals.

Participants were blinded to synbiotics but due to packaging and stability of the BCAA supplement, they could not be blinded to the BCAA supplement and its placebo. Investigators were blinded to both supplements and their placebo at all times. In order to maintain investigator blinding, the supplements and their placebo were distributed by a nurse not associated with the study. All returns were handled and recorded by an independent party.

2.6. Additional Data

Standard biochemical indicators of liver function, neutrophil:lymphocyte ratio (NLR), measures of nutritional status including subjective global assessment (SGA) [31], hand grip strength and mid-arm muscle circumference [18], 3-day food intake food diaries, all medications, either physician prescribed or self-prescribed, and depression and anxiety scores [32] were collected at baseline, at 4 weeks and at 8 weeks on completion of the study. Disease severity was assessed by Model for End-stage Liver Disease (MELD) and Child Pugh (CP) scores [33]. FoodWorks Professional®

[34] was used to analyse nutrient intakes from the 3-day food diaries recorded by participants.

2.7. Mood and Cognitive Assessment of Participants

The Depression and Anxiety Stress Scale-21 (DASS-21), a self-administered shortened form of the 42-question DASS was used to assess participants' negative emotional states [32]. DASS-21 is more appropriate for clients with limited concentration and aims to separate the core symptoms of depression, anxiety, and stress and is responsive to alterations in clinical status [35].

It is well recognised that there is a learning effect with repetitive administration of psychometric tests in the normal population and that individuals with impaired brain function have a smaller learning effect [36]. The ICT and TMT B are tools that are used clinically to assess HE [8,11]. They evaluate sustained attention and the ability to inhibit responses to potentially relevant stimuli during a stressful working memory updating condition [8,9].

The TMT is a pencil-paper test which measures graphomotor speed, mental flexibility, visual scanning, sequencing, and attention, and results are expressed as time taken to perform the task. TMT A requires participants to join 25 numbers scattered across the page in the correct order and is a simpler test than TMT B. TMT A serves as a baseline for the more complex TMT B which requires greater cognitive ability, wherein participants are required to alternate between numerical and alphabetical systems [28].

The ICT is a fast-paced task that assesses working memory, learning capacity, and response inhibition [6] used to identify



minimal hepatic encephalopathy [8]. A sequence of letters is presented on a computer screen and subjects are instructed to respond to alternating patterns of the letters X and Y (targets) [8]. Non-alternating presentations of the letters X and Y are randomly planted in the sequence of letters (lures) [8]. There are 212 targets and 40 lures [8]. Patients with cirrhosis have a higher incorrect lure response than normal healthy controls [27]. ICT is influenced by factors such as age, level of education, and familiarity with computers. ICT becomes more relevant if lure outcomes, which measure inhibition ability, are adjusted by target accuracy, a measure of attention ability [27]. The sensitivity and specificity of the weighted lure response in an Italian study was maintained after adjusting for level of education [27]. As there was a wide variation in the level of education attained by the individual participants within our group, the weighted lure response was calculated to identify changes in HE.

2.8. Statistical Analysis

Demographical and clinical characteristics were compared between intervention groups using chi-square tests for categorical data, and one-way analysis of variance for continuous variables. Group performance at baseline on the TMT A and TMT B was compared to normative data [28] using independent sample t-tests (with a Welch correction to the degrees of freedom due to unequal variance). Primary and secondary outcome data were analysed using linear mixed effects regression models, with intervention, study time point (baseline, 4 weeks, 8 weeks), and their interaction included as fixed effects and participant ID treated as a random effect.

Analysis was performed as intention-to-treat (ITT). However, it was recognised that participants may forget to take the prescribed treatment at least once weekly, and as such, an “as-treated” or per protocol (PP) analysis using 75% compliance was performed and reported [37]. Stata 15.1 (StataCorp, College Station, Texas, USA) was used to conduct analyses. Given the exploratory nature of the work reported, two-tailed *p*-values less than 0.05 were considered statistically significant; no corrections were made for multiple comparisons.

3. Results

Sixty-one participants with a history of minimal (MHE), taking 63 ± 5.7 mL lactulose/day, were recruited into the study. The intention-to-treat (ITT) analysis included all participants who returned for at least one follow-up visit at 4 weeks and/or 8 weeks ($n = 49$). The PP analysis included participants who had a $\geq 75\%$ compliance ($n = 43$). The study was abandoned prior to the completion of recruitment due to the introduction and widespread use of rifaximin as a primary treatment for HE during the study [23].

There were no adverse effects reported with either the BCAAs, synbiotics, or the combined synbiotic and BCAA treatment during this study.

Participants who failed to return for at least one follow-up visit did so for a variety of reasons including liver transplantation ($n = 3$), deteriorating disease status ($n = 3$), voluntary abandon prior to starting intervention ($n = 2$), or voluntary abandon during the study ($n = 4$) (Figure 1). Two participants who had significantly decompensated cirrhosis (CP C) prior to



entry withdrew during the study due to disease progression.

No significant differences between randomised groups were observed on any measure at baseline. ANOVA analyses of both ITT and PP did not identify a significant change in lactulose doses during the study period across the cohort and there were no significant alterations in lactulose doses within intervention groups ($p = 0.5$). Eighty-six percent of participants were males and the average age of participants at enrolment was 55.8 ± 6.1 years. The most common disease aetiology was viral hepatitis (54%), followed by alcohol-related liver disease, and non-alcoholic steatohepatitis. Mean serum ammonia concentration at enrolment was 80.9 ± 47.7 $\mu\text{mol/L}$ which was more than twice the upper limit of the reference range (32 $\mu\text{mol/L}$). On enrolment into the study MELD, CP score, and NLR were elevated. There were no significant differences in MELD and CP scores across groups at each time interval indicating disease stability through the study period including in the placebo group. Dietary protein intake was 1.3 g/kg/day and was constant across all treatment groups for the duration of the study.

There was a high prevalence of malnutrition within the study population demonstrated by the SGA results [30] which identified 71% of participants ($n = 34$) as malnourished at enrolment. Mean baseline mid-arm muscle circumference was <35th percentile and dominant hand grip strength was 61% of predicted result. Body composition was unchanged throughout the study. Average performance on both the TMT A and TMT B at baseline

was significantly impaired ($p < 0.001$) in comparison to the normative sample [27].

There was a trend towards reduced ammonia levels at four weeks in the BCAA alone treatment group compared to placebo (ITT: $p = 0.07$; PP: $p = 0.08$) but there was no difference in ammonia levels in the BCAA alone treatment group at eight weeks compared to placebo (ITT: $p = 0.10$; PP: $p = 0.12$). Further, there were no differences in ammonia for the synbiotic alone group or the combined synbiotic and BCAA treatment group over time in both the ITT and PP groups.

TMT A showed a small but significant improvement over time (ITT: $p = 0.006$; PP: $p = 0.009$) in the placebo group, likely reflecting a practice effect. The intervention by study time interaction provided little statistical evidence that performance differed over time across intervention groups (ITT: $p = 0.07$; PP: $p = 0.19$). For the more complex TMT B, there was no statistical evidence of performance improvement over time in the placebo group (ITT: $p = 0.09$; PP: $p = 0.07$). However, there was statistical evidence that the changes over time differed across intervention groups (intervention by time interaction, ITT: $p = 0.002$; PP: $p = 0.01$). Compared with the placebo group, the combined synbiotic and BCAA group showed significantly greater improvements at 8 weeks relative to the baseline placebo group (ITT: $p = 0.018$; PP: 0.017). The intervention by time interaction in the placebo group and in the combined synbiotic and BCAA group are demonstrated in Figure 2. Relative to changes observed in the placebo group, there were no greater differences in TMT B



performance in the synbiotic or BCAA groups compared to baseline.

There were no differences in the number of correct target responses across time (ITT: $p = 0.11$; PP: 0.15) and no evidence of an interaction between intervention and time (ITT: $p = 0.37$; PP: $p = 0.37$) was observed. Similarly, target accuracy did not improve over time (ITT: $p = 0.11$; PP: $p = 0.16$), nor were differences seen across interventions over time. However, the decrease in performance from baseline to four weeks was much larger for those in the placebo group compared to the synbiotic group (ITT: $p = 0.007$; PP: $p = 0.008$).

For lure responses, significantly fewer lures were responded to at both four weeks (ITT: $p = 0.049$; PP: $p = 0.023$) and eight weeks (ITT: $p = 0.011$; PP: $p = 0.007$) compared to baseline in the placebo group, likely reflecting a learning effect due to task repetition. However, there was no evidence that changes in performance over time differed across the intervention groups (ITT: $p = 0.52$; PP: $p = 0.57$).

Similarly, a significant reduction in weighted lures was observed at both four weeks (ITT: $p = 0.049$; PP: $p = 0.023$) and eight weeks (ITT: $p = 0.049$; PP: $p = 0.023$) for all groups compared to baseline in the placebo group. The interaction between intervention and time was statistically significant (ITT: $p = 0.015$; PP: $p = 0.05$). For the ITT analysis, this interaction was driven by a greater change from baseline in the synbiotic and BCAA alone groups at both four weeks (synbiotic: $p = 0.015$; BCAA: $p = 0.026$) and eight weeks (synbiotic: $p = 0.037$; BCAA: $p = 0.01$) compared to the changes observed in the placebo group (Figure 3). In contrast, the interaction from the PP analyses was likely driven by a greater increase in

weighted lure responses between baseline and four weeks follow-up in the combined synbiotics and BCAA group relative to the changes over time in the placebo group ($p = 0.029$).

4. Discussion

The principal findings of this study were an improvement in cognitive performance with combined synbiotic and BCAA treatment in individuals with HE. Cognitive improvement at conclusion of the study was not associated with a significant reduction in serum ammonia. Consistent with other research, this randomised trial of HE treatment had a number of recognised limitations including a marked placebo effect, patient heterogeneity, poor compliance [38], and widespread adoption of other treatment options that lead to difficulty recruiting patients [26].

All patients were shown to be encephalopathic throughout the study and due to the episodic nature of HE [11], individual participants were functioning variably at the time of testing. However, there was evidence of improvement in TMT B performance and the ICT weighted lures only in participants who received the combined synbiotic and BCAAs treatment, indicating a reduction in the level of HE in this group.

MELD, CP, and NLR are markers of disease severity and the results indicate significant decompensated cirrhosis in all participants at levels associated with overall increased morbidity and reduced survival [39].

Elevated serum ammonia concentrations are associated with the development of HE and were elevated in all patients, which is consistent with other studies [10]. There was no significant change in serum ammonia concentrations between the



placebo and treatment groups after eight weeks, which may reflect the results of previous studies showing ammonia concentration was not associated with the severity of HE [10]. However, the trend towards lower serum ammonia concentrations between the placebo group and the BCAA treatment group at four weeks ($p = 0.07$) did not persist at eight weeks, which may be a consequence of the small number of subjects enrolled in the study.

Our study is consistent with previous studies which demonstrated significant learning effects in participants who completed TMT A [36] that were not replicated in TMT B testing [36]. The TMT A learning effect may last at least until six weeks [36]. Our results failed to demonstrate any significant differences in the TMT A results between placebo and treatment groups which may simply reflect a learning effect across the groups on TMT A, or inadequate sample numbers to detect small effect sizes. Supplementation with synbiotics alone did not appear to improve levels of HE as demonstrated by poorer TMT B performance at four weeks and eight weeks. However, those who received the combined synbiotics and BCAA treatment had significantly reduced TMT B times at eight weeks ($p = 0.001$) indicating an improvement in HE. It appears from these results that TMT B is a sensitive measure capable of detecting differences in cognition in patients with HE.

The results also indicate that ICT weighted lures may be more sensitive to alterations in HE than lure response or target response, which is consistent with the results of a previous study showing lure response

alone or target response alone represent poor markers of HE [27].

Anxiety is a relatively common feature of end-stage liver disease that occurs in 14%–45% of individuals with chronic liver disease [40], has a significant impact on health-related quality of life and functional capacity [41], and may vary with older age (>60 years) [42]. These results are the first to show an improvement in anxiety in the PP group who received combined treatment with synbiotics and BCAA ($p = 0.035$).

There are a variety of strategies utilised in the management of HE which predominantly focus on ammonia lowering strategies¹, the most common being lactulose and rifaximin [1]. There have been reports of improved cognition, reduced risk of hospitalisation, and reduction in disease severity in patients with cirrhosis in response to supplementation with BCAAs [21] or the probiotic VSL#3 [18,43]. Reductions in endotoxemia, TNF, and improvement in dysbiosis demonstrated by beneficial changes in the stool microbial profile have also been reported in subjects who were taking the probiotic *Lactobacillus* GG [44]. These changes were not associated with a change in cognition [44].

This study could not demonstrate an improvement in levels of HE when the supplements were taken individually but, importantly, there was a significant improvement in cognition and, therefore, executive functioning when the treatments were combined. The positive results observed in the combined synbiotic and BCAA group suggest that synbiotics and BCAAs act synergistically to improve cognition and inhibition in patients with overt HE. Our results indicate that



combined treatment with synbiotics and BCAA may be an additional and safe treatment option for the management of overt HE. A larger study is needed to confirm these results.

Study Limitations

Due to the progressive nature of decompensated cirrhosis, 16% of participants who were originally recruited withdrew from the study due to worsening symptoms or voluntary abandonment, further limiting the data available for analysis. In addition, participants had MHE throughout the study which may be episodic, recurrent, or persistent [2]. Therefore, it is possible that participants exhibited fluctuating levels of HE at the time of testing. A larger study is suggested to investigate the effects of intervention with synbiotics and BCAAs on covert HE.

Analysis of the microbial diversity and richness of stool samples and assessment of intestinal epithelial permeability would have enhanced the results of this study but were not available at the time of the study design. Future studies in this area would benefit greatly by the addition of both microbial stool analysis and measures of intestinal epithelial permeability. Microbial analysis continues to evolve over time such that both a metagenomics and metabolomics approach would be ideal to identify not just the beneficial microbiota but also microbial products impacting HE.

As a result of the widespread adoption of rifaximin as a standard treatment, recruitment to this study was severely limited resulting in a small sample size. A larger study is needed to further explore the treatment effects which should include a rifaximin arm.

5. Conclusions

This study is, to the best of our knowledge, the first to report the effects of combined oral supplementation with synbiotics and BCAAs in subjects with decompensated cirrhosis and MHE. The results demonstrate a positive treatment effect with the combined synbiotics and BCAAs. Although a larger study is recommended to investigate the effects of intervention with synbiotics and BCAAs on both covert and overt HE, these results suggest that oral supplementation with a combination of synbiotics and BCAAs may be an effective additional treatment for individuals with HE.

Author Contributions: H.V. conceptualised and designed the study, collected the data, was involved in the data analysis and interpretation, and is responsible for the final manuscript. E.C. was responsible for the major statistical analysis, interpretation of data, and critical manuscript revision. E.A.S. was involved in the initial study design and contributed the interpretation of data and critical manuscript revision. L.J.F. contributed to the statistical analysis and critical manuscript revision. D.G.B. contributed to participant selection and critical manuscript revision.

S.I.S. contributed to participant selection and critical manuscript revision. G.W.M. contributed to participant selection and critical manuscript revision. S.C. contributed to the critical manuscript revision. M.A.-F. contributed to the critical manuscript revision. N.A.S. contributed to the study design, review of the project, and critical manuscript revision.

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THE ROLE OF VARIOUS OPTIONS FOR ARTIFICIAL NUTRITION IN ACUTE PANCREATITIS

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ABSTRACT

Artificial nutrition is an inherent part of management in acute pancreatitis. However, there is no consensus regarding the optimal time of the commencement of feeding in these patients. Our aim was to compare the effect of enteral v. parenteral nutrition with regard to the time points when they were administered in the randomised controlled trials.

Artificial nutrition has been regarded as an important component in the treatment of patients with acute pancreatitis⁽¹⁻³⁾. However, while parenteral nutrition had a major weight in artificial nutrition during the 1970s–1990s, the last decade was characterised by a gradual shift in nutritional management towards enteral nutrition. Three systematic reviews, which incorporated the data from available randomised controlled trials (RCT) on enteral v. parenteral nutrition in acute pancreatitis, have consistently confirmed this change and have shown a statistically significant reduction of infectious complications with the use of enteral nutrition⁽⁴⁻⁶⁾. Moreover, a recent meta-analysis, confined to RCT on patients with severe acute pancreatitis,

revealed a significantly reduced mortality in patients received enteral over parenteral nutrition⁽⁷⁾.

At the same time, the mechanism of such a beneficial effect of enteral nutrition is not entirely understandable^(8,9). At least in part, the timing of nutrition might have an influence on the results observed. In general, it is supposed that enteral nutrition contributes to the maintenance of the intestinal barrier function and may prevent bacterial translocation from the lumen^(10,11). Thereby, intuitively it seems logical to commence enteral nutrition early in the course of acute pancreatitis^(2,12). However, whereas some authors advocate the early start of nutrition within the hours after hospital



admission⁽¹²⁻¹⁴⁾, others prefer a wait-and-see policy, when the commencement of enteral feeding may be postponed for up to 17 d after admission to hospital⁽¹⁵⁻¹⁷⁾. So, until now the optimal time frameworks for the initiation of feeding in patients with acute pancreatitis have not yet been investigated. Therefore, we aimed at conducting a systematic review of RCT on enteral v. parenteral nutrition in patients with acute pancreatitis to define whether the time of the commencement of nutrition has an influence on the risk of clinically meaningful outcomes such as multiple organ failure, pancreatic infectious complications and mortality.

Methods

Study selection

We performed an electronic search for publications between 1950 and 1 March 2008, using the Cochrane Central Register of Controlled Trials, MEDLINE and Science Citation Index. The search was restricted to human studies that were published in English, French, German, Russian, Spanish or Dutch.

The terms used for the search in the Cochrane Central Register of Controlled Trials and Science Citation Index were: 'acute pancreatitis' and 'enteral nutrition' or 'parenteral nutrition' and 'randomised trial'. The terms used for the search in MEDLINE were: 'pancreatitis' (medical subject heading (MeSH)) and 'enteral nutrition' (MeSH) or 'parenteral nutrition' (MeSH)

or 'parenteral nutrition, total' (MeSH) and 'random-ised controlled trials' (publication type). Reference lists of all available published RCT and reviews on nutrition in acute pancreatitis were cross-checked manually to ensure that all applicable papers were included. Additionally, the abstracts of major gastroenterology congresses were also searched manually.

Each potentially relevant RCT was assessed for inclusion independently by two reviewers. Differences in opinion between the reviewers were resolved by consensus. Accepted interventions included enteral nutrition v. parenteral nutrition in acute pancreatitis. Only studies that reported the timing of the initiation of the nutrition protocol and the data on at least two of the three most clinically meaningful outcomes (multiple organ failure, pancreatic infectious complications and mortality) were considered.

Data extraction and quality assessment

Two reviewers, by means of a standardised data collection form, independently extracted general trial information, data on the study quality, details of nutrition protocols, including the timing of feeding start, and outcome data. Outcome variables included in the meta-analysis were: multiple organ failure, pancreatic infectious complications and mortality. The Jadad scale⁽¹⁸⁾ was used to assess the following aspects of the study quality: randomisation, double-blinding,



withdrawals and drop-outs (minimum total score 0, maximum total score 5). An RCT with a score higher than 2 was considered as an RCT of good quality⁽¹⁹⁾.

Statistical analysis

Analyses were done using the computer program Review Manager (version 4.2 for Windows; The Nordic Cochrane Centre, The Cochrane Collaboration, 2003, Copenhagen, Denmark). Pooled risk ratios (RR) and 95 % CI were calculated using a random-effects model. RR values of >1.0 represented an advantage for the enteral nutrition group compared with the parenteral nutrition group. The I^2 test and χ^2 test were used for the evaluation of statistical heterogeneity between included trials. A value of the I^2 measure more than 25 % and P value of the χ^2 test lower than 0.1 were considered to denote the presence of statistically significant heterogeneity between included RCT⁽²⁰⁾. Publication bias was assessed by the funnel plot method of Egger's test⁽²¹⁾.

Predefined stratified analyses were performed to evaluate the difference in RR between trials on early v. delayed nutrition. The time of nutrition commencement in each RCT was applied to the certain time points (24 h and 48 h after admission) and the corresponding study was assigned to either early or delayed group with regard to that time point. The estimated interaction effect was calculated as a ratio of RR for early and delayed nutrition. The significance of this effect

was assessed by using the test of interaction⁽²²⁾. P values less than 0.05 were considered to be significant.

Results

A total of 268 reports were screened and eleven RCT met our inclusion criteria (Fig. 1). Ten reports were available as full-text papers^(14-16,23-29) and one was published in abstract form only⁽³⁰⁾. Three (27 %) trials were published before the year 2000⁽²³⁻²⁵⁾. With regard to disease severity, seven of eleven trials incorporated solely patients with severe acute pancreatitis^(14,16,24,27-30), whereas the patient population consisted of both patients with mild and severe acute pancreatitis in four trials^(15,23,25,26).

Regarding methodological quality characteristics, although all trials reported a statement on randomisation, the treatment assignment method was not described in three RCT (27 %)^(15,23,30). Double-blinding was not possible due to the nature of the interventions. The description of withdrawals and drop-outs was reported in ten (91 %) RCT. A Jadad score of higher than 2 was attributed to six (55 %) trials^(14,16,24,27-29). The included studies comprised a total of 451 patients (214 patients received enteral nutrition and 237 patients received parenteral nutrition), ranging from seventeen to eighty-nine. Table 1 shows the study characteristics of RCT included in the systematic review. The data on study outcomes in each trial are presented in Table 2.



The nutrition protocol was initiated within 24 h of admission in four RCT and after 24 h in seven studies. With regard to this time point, the former was considered as 'early' nutrition and the latter as 'delayed' nutrition. Having applied this stratification, delayed nutrition, when compared with early nutrition, resulted in a greater risk reduction of pancreatic infectious complications (Fig. 2), but not multiple organ failure and mortality in patients with both mild and severe acute pancreatitis (Table 3). The test of interaction was non-significant in all comparisons. Heterogeneity between study results in these analyses was entirely attributable to random variation ($I^2 = 0\%$). When only patients from trials on severe acute pancreatitis were considered, delayed nutrition, in comparison with early nutrition, resulted in a reduction of risks for pancreatic infectious complications, multiple organ failure and mortality (Table 3). The test of interaction was non-significant. The early nutrition group had a

moderate heterogeneity in regard to pancreatic complications ($I^2 = 35\%$) and mortality ($I^2 = 65\%$), but not multiple organ failure ($I^2 = 0\%$).

The nutrition protocol was initiated within 48 h of admission in seven RCT and after 48 h in four studies. With regard to this time point, the former was considered as 'early' nutrition and the latter as 'delayed' nutrition. Having applied this stratification, delayed nutrition, when compared with early nutrition, resulted in a greater reduction of the risks for pancreatic infectious complications (Fig. 3), but not multiple organ failure and mortality in patients with both mild and severe acute pancreatitis (Table 3). The test of interaction was non-significant. Heterogeneity between study results in these analyses was mainly attributable to random variation ($I^2 = 0, 0$ and 21% for multiple organ failure, pancreatic infectious complications and mortality, respectively). In trials that incorporated exclusively patients with severe Artificial nutrition and acute pancreatitis

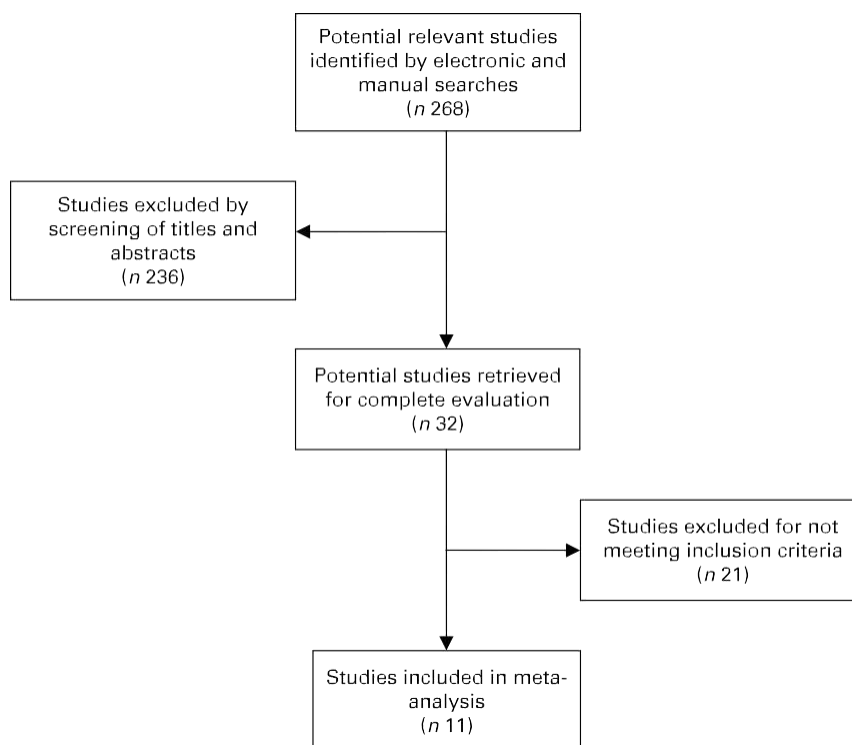


Fig. 1. Selection of eligible randomised controlled trials.

acute pancreatitis, delayed nutrition, in comparison with early nutrition, resulted in a greater reduction of risks for pancreatic infectious complications, multiple organ failure and mortality (Table 3). The test of interaction was non-significant in all comparisons. Heterogeneity between the study results in regard to multiple organ failure, pancreatic infectious complications and mortality was low (I^2 0, 0 and 23 %, respectively).

Discussion

In line with the results of previous meta-analyses^(4–8) on enteral v. parenteral nutrition in acute pancreatitis, the present

Table 1. Study characteristics meta-analysis demonstrates the benefit of enteral nutrition in terms of risk reduction of infectious complications and mortality.

For the first time, it shows a statistically significant risk reduction of multiple organ failure in patients who received enteral over parenteral nutrition. These benefits were especially pronounced in patients with severe acute pancreatitis.

CONCLUSION

Another important finding of the present meta-analysis is that the timing of nutrition in the analysed trials might affect the clinical outcomes. Namely, the difference in the efficacy between enteral and parenteral nutrition is clearly evident in patients with an early (within 24 or 48 h after admission).



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