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PSEUDOMONAS AERUGINOSA BAKTERIYASINING YUQUMLI KASALLIKLARIDAGI O‘RNI

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ABSTRACT: *Ushbu tadqiqotda Pseudomonas aeruginosa mikrobi odamlar va parranda populyatsiyasida, ayniqsa tovuq embrionlari va jo‘jalaridagi tarqalishi va patogenligi o‘rganildi. Oxirgi o‘n yillikda olingan laboratoriya ma’lumotlarini retrospektiv tahlil qilish natijasida O‘zbekistonda turli klinik muassasalar va parranda fermalarida P. aeruginosa infeksiyalarining sezilarli darajada oshgani aniqlandi. Shuningdek, tadqiqotda bu patogenning tarqalishiga sabab bo‘lgan omillar, jumladan, sanitariya qoidalarining buzilishi, hayvonlarning tiqilinch sharoitda saqlanishi va boshqa yuqumli kasalliklarda ikkilamchi opportunistlar sifatidagi roli ham o‘rganildi. Olingan natijalar P. aeruginosa tarqalishini nazorat qilish va uning keltirib chiqaradigan kasallik va o‘lim holatlarini kamaytirish uchun qat’iy sanitariya va bioxavfsizlik choralarini joriy etishning ahamiyatini ta’kidlaydi.*

Kalit so‘zlar: *Pseudomonas aeruginosa, psevdomona sepsisi, parranda, tovuq embrionlari, antimikrob rezistentlik, bioxavfsizlik, jamoat salomatligi, veterinariya tibbiyoti.*

KIRISH.

Pseudomonas aeruginosa yoki ko‘kyiring tayoqchasi gram manfiy aeroob bakteriya bo‘lib, spora hosil qilmaydi. U yuqori patogenlik xususiyatiga ega va normal immunitetli, hamda ayniqsa immuniteti susaygan bemorlarda turli infeksiyalarni keltirib chiqarishi mumkin [1]. Keng ta’sir doirasi, antibiotiklarga chidamliligi va mezbon organizm bilan murakkab o‘zaro ta’sir mexanizmi ko‘kyiring tayoqchasini zamonaviy klinik amaliyotda davolash qiyin bo‘lgan patogenlardan biriga aylantiradi [2]. Pseudomonas aeruginosa tez-tez odamlar va qushlarda turli infeksion kasalliklarning qo‘zg‘atuvchisi sifatida namoyon bo‘ladi [4, 8]. Ayniqsa, bu bakteriya

jarohatlar, jarrohlik amaliyotlaridan keyin va statsionar sharoitda infeksiyalarni keltirib chiqarib, gospital infeksiyalar rivojlanish xavfini sezilarli darajada oshiradi [6, 9].

So‘nggi yillarda tovuq jo‘jalarida psevdomonad sepsisi alohidagi kasallik sifatida ko‘rib chiqilyapti (Bessarabov B.F., 2020; Otrыganev G.K. va boshqalar, 2021). Borisenkova A.N. va hamkorlarining tadqiqotlariga ko‘ra (2019), ko‘kyiring bakteriyalari tovuq embrionlari va hayotining birinchi kunlaridagi tovuq jo‘jalarini zararlaydigan boshqa ma’lum patogenlar orasida dominant qo‘zg‘atuvchiga aylanmoqda [3, 11,14].

TADQIQOT MAQSADI.

Yuqoridagilarga asoslanib, bu masalani tibbiyot, veterinariyada batafsil o‘rganish va amaliy materiallar to‘planishi bilan odamlar, hayvonlar va qushlardagi infeksion patologiya roli haqida xulosa chiqarish dolzarb hisoblanadi.

MATERIALLAR VA USULLAR.

Odamlar va qushlarda psevdomonoz kelib chiqishini so‘nggi 10 yil ichidagi SamMU va O‘zNIIV laboratoriya ma’lumotlari asosida o‘rganildi. Epidemiologiya va epizootologiyaning viloyat xususiyatlari O‘zbekiston Respublikasining bir qator tibbiyot klinikalari, ferma va parrandachilik xo‘jaliklarida o‘tkazildi. Ko‘kyiring bakteriyasi kulturasi statsionar bemorlardan, shuningdek inkubatorlardagi tuxum qobig‘idan, o‘lik embrionlardan, tovuq jo‘jalari va katta qushlarning parenximatoz organlaridan ajratib olindi. Buning barobarida morfologik, bo‘yoqlarga munosabati, kultural biokimyoviy xususiyatlari o‘rganildi. Shuningdek, patogenlik va antibiotiklarga sezgirlik ham o‘rganildi. So‘rtmalarni bo‘yash Gram usulida amalga oshirildi, preparatlar Leica DM1000 mikroskopida mikroskoplanadi. Ko‘kyiring bakteriyasi kulturalarining harakatchanligi ezilgan va osilgan tomchi usuli bilan aniqlandi.

Ajratilgan kulturalarning biokimyoviy xususiyatlarini aniqlash uchun ularni Giss muhitiga har bir kultura uchun ikkitadan ekib, ayrim probirkalarga muhit yuzasiga sterillangan vazelin moyidan 0,5 sm balandlikdagi ustuncha qilib quyib, anaerob sharoit yaratiladi. Ekilgan kulturalarni +37°S haroratda inkubatsiya qilinadi. Shakarlarni parchalash xususiyatlarini turli uglevodlar (glyukoza, laktoza, mannit, saxaroza, ramnoza, ksiloza, adonit, arabinoza, maltoza, inulin, sorbit, dulsit, dekstrin) bo‘lgan differensial-diagnostika muhitlariga kulturalarni ekib o‘rganildi. Indol va sulfid vodorodni indikator qog‘ozchalardan foydalanib aniqlanadi. Shuningdek, metilrot, xloroform va katalaza bilan reaksiya qo‘yiladi. Ko‘kyiring tayoqchasining patogenligi oq sichqonlar, tovuq embrionlari va jo‘jalalarda biologik sinovlarni o‘tkazib laboratoriya modelida aniqlanadi. Ko‘kyiring tayoqchasining antibiotiklarga sezgirligi disklardan foydalanib agarda diffuziya usuli bilan o‘rganiladi.

TADQIQOT NATIJALARI.

Psevdomonoz kasalligi keng tarqalgani va tez-tez uchrashi bilan ajralib turdi. O‘zbekiston Respublikasida so‘nggi 10 yil ichida mazkur kasallik ko‘plab klinikalar, gospitallar, fermalar va parranda fabrikalarida har yili uchrab kelmoqda. Kuzatuvlarga ko‘ra, kasallikning paydo bo‘lishi va tarqalishiga antisanitariya, ayniqsa, parranda fabrikalarida tiqilinch joylashtirishda, sexlardagi mikroklimatning buzilishi sabab bo‘lmoqda. Havoning namligining oshishi, kundalik saralash va zaif, yaroqsiz va kasal qushlarni yo‘q qilish ishlarining olib borilmasligi kasallikning tarqalishiga olib kelmoqda. Shu sababli, kasallik ko‘pincha parrandalarni parvarishlash va boqishda sanitariya-gigiena qoidalari buziladigan xo‘jaliklarda uchrashi aniqlandi. Bunday xo‘jaliklarda psevdomonoz kasalligining qo‘zg‘atuvchisi bo‘lgan patogen shtammlar saqlanib qolganda, kasallik doimiy xarakter olgan holda yildan-yil takrorlanishi kuzatildi. Ko‘pincha psevdomonoz asosiy kasallikni murakkablashtiruvchi ikkilamchi infeksiya sifatida kechishi kuzatildi. Respublikamizning ba’zi klinikalari, shifoxonalari va parrandachilik xo‘jaliklarida psevdomonoz stafilokokk, koliseptitsemiya, salmonellyoz, pulloroz-tif, infeksion laringotraxeit bilan birga uchradi. Odatda, psevdomonoz qo‘zg‘atuvchisi inkubatsiya davrida va postembrional davrning birinchi kunlarida embrionlarning nobud bo‘lishiga sabab bo‘ldi. Ko‘p yillik ma’lumotlarimiz va kuzatuvlarimizga ko‘ra, infeksiyaning asosiy manbalari shifoxonalardagi gigiena qoidalarining buzilishi, parrandachilikda hayvon kelib chiqishli ozuqa qo‘shimchalari, ko‘kyiring tayoqchalari bilan ifloslangan omuxta yemlar, kasal qushlar, ifloslangan chiqindilar, tuxumlar, inkubatsiya chiqindilari va boshqalar hisoblanadi.

Psevdomonoz qo‘zg‘atuvchisining biologik xususiyatlarini o‘rganishda quyidagilar aniqlandi: morfologik va bo‘yoq oluvchanlik xususiyatlari bo‘yicha qisqa, to‘g‘ri yoki egri tayoqchasimon, yakka holda joylashgan, harakatchan, spora va kapsula hosil qilmaydi. Mikrob anilin bo‘yoqlari bilan bo‘yaladi, gram manfiy. Ko‘kyiring tayoqchasi zich ozuqa muhitlarida, shuningdek, GPB, GPA, Endo muhitida yaxshi o‘sdi. Ko‘pchilik shtammlar sitoxromoksidaza, katalaza hosil qiladi, glyukonat, mochevinani parchalab, sitratlarni o‘zlashtirdi, asetil karbinol hosil qilmadi. Ko‘plab kulturalari indol manfiy, sutni ivitdi, jelatinni eritdi.

Pseudomonas aeruginosa eritrotsitlarni parchalab, beta-gemoliz hosil qildi, mochevinani parchalab, avval voronka, so‘ng muhitning qatlamlanishiga olib keldi. Giss muhitlarida ekilganda, Pseudomonas aeruginosa kulturalarining aksariyati aerob sharoitda glyukoza, arabinoza, manit, galaktoza, ksilozani kislota va gaz hosil qilib fermentladi. Saxaroza va laktozani fermentlashi kuzatilmadi.

Ajratilgan Pseudomonas aeruginosa kulturalarining patogen xususiyatlari oq sichqonlar, tovuq embrionlari va 10-15 kunlik jo‘jalarga yuqtirish orqali o‘rganildi. Oq sichqonlarga yuqtirilganda, ular 2-3 kunda nobud bo‘ldi, tovuq embrionlari esa 48

soatdan so‘ng hosil bo‘lgan va giperemiya belgilari bilan nobud bo‘ldi. Yuqtirilgan jo‘jalar ikkinchi kuni patlari to‘kilib, qizarish belgilari bo‘lib, ozuqadan bosh tortishi, yotoqsirashi kuzatildi. Jo‘jalarning nobud bo‘lishi ikkinchi kuni qayd etildi.

Psevdomonoz qo‘zg‘atuvchisi kulturalarining antibiotiklarga sezgirlik darajasi o‘sish to‘xtash zonasi diametrining kattaligi bo‘yicha baholandi. Tajribalarimizda neomitsin, olemorfotsiklin, streptomitsin va polimiksinga sezgirlik aniqlandi. G.K.Paliy va hamkorlarining (2015) ma’lumotlariga ko‘ra, chorvachilikda keng qo‘llaniladigan spermosan preparati (penitsillin va streptomitsinning 35 ming birlikdan iborat aralashmasi, oq streptotsid – 0,2 g) ko‘kyiring tayoqchasiga faqat 2,5 mg/ml va undan yuqori konsentratsiyada zararli ta’sir ko‘rsatgan.

MUHOKAMA.

So‘nggi yillarda odam va qushlar patologiyasida shartli-patogen mikroorganizmlarning roli kuchayishi kuzatilmoqda. Psevdomonoz dunyoning ko‘plab mamlakatlari va MDHda qayd etilmoqda (Y.Estimov va boshqalar, 2018; A.V.Selivanov va hamkorlari, 2021; S.T.Dzyubak, 2023). Bugungi kunda vujudga kelgan bunday vaziyatda kasallikni tashxis qilishni ishlab chiqishga katta ahamiyat berilmoqda. Bizning bir necha yil davomida olib borgan tadqiqotlarimiz ko‘kyiring tayoqchalarini ajratish uchun ratsional sxemani taklif qilish imkonini beradi. O‘tkazilgan epidemiologik va epizootologik tekshiruvlar va laboratoriya tadqiqotlar majmui psevdomonozning keng tarqalgani va odam va qushlarning infeksion patologiyasida muhim ahamiyatga ega ekanligini ko‘rsatdi.

XULOSALAR.

1. Psevdomonoz sanitariya-gigiena, veterinariya-profilaktika va davolash tadbirlarini tashkil etish bilan mustaqil nozologik birlik sifatida hisobga olinishi kerak.
2. Psevdomonoz qo‘zg‘atuvchisini ajratish va uning biologik xususiyatlarini o‘rganish natijalari shuni ko‘rsatadiki, bu xususiyatlar kasal odam va qushlardan ajratilgan va turli tadqiqotchilar tomonidan ta’riflangan kulturalarga o‘xshashdir.
3. Psevdomonozga tashxis patologik materialdan tipik kultural-morfologik xususiyatlarga va ushbu tur uchun xos bo‘lgan xarakterli belgilarga ega bo‘lgan kulturalarni ajratish holati sifatida belgilanishi mumkin.

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ОТНОШЕНИЕ НУКЛЕОТИДОВ В ДНК И ЗАДАЧИ, СВЯЗАННЫЕ С ИХ РАСЧЕТОМ

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АННОТАЦИЯ

В данной работе рассматриваются ключевые аспекты нуклеотидов в ДНК, а также решаются задачи, связанные с их расчетом. Основное внимание уделяется соотношениям между нуклеотидами и правилам кодирования белков.

Ключевые слова: *ДНК, нуклеотиды, аминокислоты, кодирование, задачи.*

Введение

ДНК (дезоксирибонуклеиновая кислота) — это биополимер, содержащий генетическую информацию всех живых организмов. Основой структуры ДНК являются нуклеотиды, каждый из которых состоит из азотистого основания, пятиуглеродного сахара (дезоксирибозы) и фосфатной группы. В ДНК есть четыре типа азотистых оснований:

Аденин (A) — пуриновое основание;
Тимин (T) — пиримидиновое основание;
Гуанин (G) — пуриновое основание;
Цитозин (C) — пиримидиновое основание.

Нуклеотиды ДНК объединяются в двойную спираль благодаря водородным связям между комплементарными основаниями: аденин всегда связывается с тимином (A=T), а гуанин — с цитозином (G≡C). Это комплементарное правило объясняется гипотезой Чаргаффа, которая гласит, что количество аденина всегда равно количеству тимина, а количество гуанина равно количеству цитозина.

Основные правила для решения задач

Для решения задач, связанных с расчетом нуклеотидов в молекуле ДНК, важно учитывать несколько ключевых правил:

1. Комплементарность оснований:

A = T (аденин равен тимину);

G = C (гуанин равен цитозину).

2. Соотношение нуклеотидов:

В любой цепочке ДНК сумма нуклеотидов A + G = T + C.

Процентное содержание одного нуклеотида позволяет вычислить процент содержания остальных, используя правило Чаргаффа.

3. Кодирование белков:

Для кодирования одной аминокислоты требуется триплет (три нуклеотида) — это кодон. Соответственно, количество нуклеотидов в гене, кодирующем белок, можно вычислить как количество аминокислот, умноженное на 3.

Задача 1: Расчет количества тимина

Условие: В фрагменте ДНК соотношение тимина и гуанина равно 1:2. Этот фрагмент отвечает за синтез белка с 87 аминокислотами. Найдите количество тимина в этом фрагменте ДНК.

Решение: Пусть количество тимина равно x, тогда количество гуанина равно 2x. Общее количество аминокислот равно количеству нуклеотидов, умноженному на 3: 87 * 3 = 261. Тогда: x + 2x = 261

3x = 261

x = 87.

Количество тимина равно 87.

Задача 2: Определение количества гуанина

Условие: В ДНК найдено 120 нуклеотидов, из которых 30% занимают аденин. Сколько гуанина содержится в данной молекуле ДНК?

Решение: Количество аденина равно 30% от 120:

A = 0.3 * 120 = 36.

По правилу Чаргаффа A = T, значит, T также равно 36. Теперь найдем количество гуанина. Сумма всех нуклеотидов A + T + G + C = 120. Пусть G = x и C = x. Тогда: 36 + 36 + x + x = 120

72 + 2x = 120

2x = 48

x = 24.

Количество гуанина равно 24.

Задача 3: Определение общего количества нуклеотидов

Условие: В молекуле ДНК соотношение аденина к цитозину составляет 3:1. Если в молекуле ДНК 400 нуклеотидов, найдите количество каждого типа нуклеотидов.

Решение: Пусть количество цитозина равно x, тогда аденин равен 3x. По правилу Чаргаффа A = T, значит, T = 3x и G = x. Общее количество нуклеотидов: 3x + x + 3x + x = 400.

8x = 400

x = 50.

Количество аденина = 3 * 50 = 150,

Количество тимина = 150,

Количество гуанина = 50,

Количество цитозина = 50.

Заключение

В ходе работы мы рассмотрели важные аспекты соотношений нуклеотидов в ДНК и задачи, связанные с их расчетом. Знание этих аспектов позволяет лучше понять генетическую информацию, заложенную в молекулах ДНК, а также их роль в кодировании белков.

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KANDIDAMIKOZ RIVOJLANISHIDA YOD YETISHMASLIGINING AHAMIYATI

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ABSTRACT: *Yod yetishmagan hududda yashovchi aholida qalqonsimon bez faoliyati va ularning qonida uchraydigan Candida turdagi zamburug‘lar miqdori o‘rtasidagi bog‘liqlik o‘rganildi. Qalqonsimon bezi salomatligining turlicha (nazorat guruhi, autoimmun tireoidit, diffuz toksik bo‘lmagan zob) holatlarida bo‘lgan 102 kishi (34 nafar bola va 68 nafar katta yoshdagilar) kuzatildi. Qalqonsimon bez gormonlari darajasi va qondagi Candida turdagi zamburug‘lar miqdori aniqlandi. Autoimmun tireoidit va diffuz toksik bo‘lmagan zobli bemorlarda qondagi Candida turdagi zamburug‘lar miqdori nazorat guruhiga nisbatan sezilarli darajada oshgani aniqlandi.*

Xulosa: *Yod yetishmagan hudud aholisida qalqonsimon bez faoliyatining buzilishi sababli ularning qonida Candida turdagi zamburug‘lar miqdorining oshishi o‘rtasida bog‘liqlik mavjud.*

Kalit so‘zlar: *Candida turdagi zamburug‘lar, qalqonsimon bez, autoimmun tireoidit, diffuz toksik bo‘lmagan zob, yod yetishmasligi.*

KIRISH.

Qon infeksiyalari etiologik tuzilishiga ko‘ra va yuqtiruvchi mikroorganizmlarning juda keng qamrovligi bilan tavsiflanadi, bular har qanday patogen va patogen bo‘lmagan mikroorganizmlar, shuningdek, organizmning faollashgan autoflorasi ham bo‘lishi mumkin [1]. Qon infeksiyalari rivojlanishining turli etiologik omillari orasida so‘nggi yillarda shartli patogen guruhga mansub Candida albicans, Candida tropicalis kabi achitqisimon zamburug‘lar bilan bog‘liq infeksiyaga alohida e’tibor qaratilmoqda [2]. Candida albicans va Candida tropicalis

turkumiga mansub zamburug‘lar inson yoki hayvon organizmiga tushganda to‘qima parazitik shaklga aylanadi va psevdogiflar yoki psevdomitseliy hosil qiladi [3, 4]. Teri va shilliq qavatlarining shikastlanishi bilan bir qatorda, turli organlarning chuqur, tizimli shikastlanishlari, shuningdek, septik shakllari ham ta’riflangan. Odamlardan tashqari, qushlar, uy hayvonlari va yovvoyi hayvonlar ham kandidoz bilan kasallanadi.

Kandidamikoz infeksiyalarining rezervuari tabiatda asosan tuproq bo‘lib, inson organizmida esa qon hisoblanadi, bu yerda zamburug‘larning to‘qima shakli uzoq vaqt davomida kasallikning yaqqol klinik belgilarisiz saqlanib qoladi. Candida albicans va Candida tropicalis turkumiga mansub zamburug‘lar tabiatda hamma joyda tarqalgan bo‘lib, bu butun dunyo aholisining ular bilan ommaviy kasallanish ehtimoli mumkinligini ko‘rsatadi. Shu bilan birga, ular past virulentlik va zaif antigen xususiyatlarga ega bo‘lib, bu ularning inson qonida infeksion jarayon belgilarisiz uzoq vaqt saqlanib qolishi bilan izohlanadi va ularni shartli-patogen mikroorganizmlar guruhiga ajratib turadi. Bundan tashqari, kasallikning namoyon bo‘lishiga insonning immun tizimi to‘sqinlik qiladi. Biz turli organ to‘qimalaridagi gistotsitlar, makrofaglar, T- va V-limfotsitlarda Candida turkumiga mansub zamburug‘larni fagotsitlashi xususiyatlarini kuzatdik. Candida turkumiga mansub zamburug‘larning patogen xususiyatlari boshqa turdagi mikozlarda bo‘lgani kabi makroorganizmning himoya kuchlari sezilarli darajada pasayganda, ayniqsa yod yetishmasligi sharoitida, organizm immuniteti sezilarli darajada pasayganda namoyon bo‘ladi. Zob endemiyasi kuzatilayotgan hududlarda aholining katta qismida qalqonsimon bezning kattalashishi va tireopatiyaning boshqa shakllari kuzatilganda, uning funksional holatini baholash alohida ahamiyat kasb etadi. Shuning uchun hozirda turli patologik holatlarda qalqonsimon bezning funksional holati, roli va ishtirokini o‘rganishga katta ahamiyat berilmoqda. Adabiyotlarda mikrobli etiologiyali yiringli kasalliklar va sepsislarda qalqonsimon bezning funksional holatini o‘rganishga bag‘ishlangan bir qator ishlar mavjud. Ammo, C. albicans va C. tropicalis turkumiga mansub zamburug‘lar qonda bo‘lgan holatlarga taalluqli tadqiqotlar hozirgacha olib borilmagan. Qalqonsimon bezning funksional holati to‘g‘risida qimmatli ma’lumotlarni radioimmunologik usul bilan maxsus in vitro test-naborlari yordamida yodning transport-organik fazasini o‘rganish orqali olish mumkin. Bu turdagi tadqiqotlarning yuqori sezgirlik va o‘ziga xoslik bilan bir qatorda nisbatan oddiyligi va yaxshi qabul qilinishi afzalliklaridan hisoblanadi.

TADQIQOT MAQSADI.

Ushbu ishda biosferada yod yetishmasligi kuzatilayotgan hududda yashovchi kishilarda qonda uchraydigan Candida turdagi zamburug‘ miqdori o‘zgarishi va qalqonsimon bez faoliyati o‘rtasidagi bog‘liqlikni o‘rganish maqsadi qo‘yilgan.

TADQIQOT MATERIALLARI VA USULLARI.

Tadqiqotda Samarqand viloyatida yashovchi 34 nafar bola va 68 nafar katta yoshdagi aholisi qatnashdi. Qondagi qalqonsimon bez gormonlari miqdori va Candida albicans hamda Candida tropicalis turdagi yetilgan zamburug‘lar soni o‘rganildi. Nazorat guruhini 10 nafar bola va 13 nafar katta kishi tashkil etdi. Asosiy guruhni autoimmun tireoiditli 24 nafar bola va 55 nafar katta kishi (14 nafar bola va 38 nafar katta kishi) hamda toksik bo‘lmagan diffuzli zobli 10 nafar bola va 17 nafar katta kishi tashkil etdi.

Tadqiqot o‘tkazilgan shaxslarning yoshi 5 yoshdan 55 yoshgacha bo‘lib, 5 yoshdan 14 yoshgacha bo‘lgan 11 nafari o‘g‘il bola va 23 nafari qiz bola, hamda 15 yoshdan 55 yoshgacha bo‘lgan 29 nafar erkak va 39 nafar ayol kuzatildi.

Candida turdagi zamburug‘lar shartli patogen xususiyatga ega bo‘lgani sababli, qondagi zamburug‘ miqdorini miqdoriy tahlil qilindi. Standart uslublarga muvofiq, tekshirilayotgan shaxslardan barmoq uchidan yoki venadan 0,02 ml qon olinib, probirkaga solinib, shisha tayoqcha bilan aralashtirilib, Goryaev kamerasida mikroskop ostida ko‘rildi.

Yetilgan hujayralarni hisoblash qon suyultirish (200), biriktirilgan ko‘rish maydonlari soni (100) va katta kvadrat hajmi (1/250)dan kelib chiqib formula bo‘yicha amalga oshirilgan. X=(s×250×200)/100 ya’ni X=S×500 bu yerda:

X-qonning 1 mkm³ dagi yetilgan zamburug‘ hujayralari soni;

S-100 ta katta kvadratdagi yetilgan zamburug‘ hujayralari soni. Amalda sog‘lom kishilarda qonning 1 mkm³ dagi Candida zamburug‘ining yetilgan hujayralari soni 1000 dan 6000 gacha uchrashi mumkin.

Qalqonsimon bezning funksional holati gipofiz gormoni – tireotropin (TTG) va qalqonsimon bez gormonlari – triyodtironin (T3) va tiroksin (T4) miqdorini qon zardobida radioimmun metod yordamida mikroanaliz qilish (in vitro) orqali aniqlandi. Qalqonsimon bez gormonlarining normal ko‘rsatkichlari sifatida ushbu institut tomonidan viloyatning turli hududlarida aholi orasida keng qamrovli tadqiqot o‘tkazish jarayonida olingan ma’lumotlar qabul qilindi (2018-2019 yillar), ya’ni T3 – 1,7±0,12 nmol/l, T4 – 1333,0±11,6 nmol/l va TTG – 2,5±0,23 mME/l. Olingan natijalar har bir ko‘rsatkich uchun M±m, 95% ishonch intervallari va qatorning variatsiya koeffitsientini aniqlash bilan ishlandi.

NATIJALAR VA ULARNI MUHOKAMA QILISH.

Mikologik tadqiqotda nazorat guruhida – 10 nafar bola (o‘g‘il bolalar – 3, qiz bolalar – 10) va 13 nafar kattalarda (erkaklar – 6, ayollar – 7) qonda Candida turkumiga mansub yetilgan zamburug‘ hujayralarining normal miqdori aniqlandi. Bu guruhdagi tekshirilgan shaxslarda klinik kuzatuvlarda hech qanday somatik va infeksion

kasalliklarning belgilari, shuningdek, qalqonsimon bezning funksional zo‘riqish holatlari kuzatilmagan.

Autoimmun tireoidit va diffuz toksik bo‘lmagan zob kasalliklariga chalingan 6 nafar o‘g‘il bola va 18 nafar qiz bola, shuningdek, 55 nafar kattalarda (erkaklar – 21, ayollar – 34) qonning 1 mkm hajmidagi yetilgan zamburug‘ hujayralarining miqdori oshib ketgan. Qonning mikologik tadqiqoti natijalari 1-jadvalda keltirilgan.

1-jadval.

Qonning mikologik tadqiqoti ko‘rsatkichlari
(qonning 1 mkm hajmidagi Candida turkumiga mansub yetilgan zamburug‘ hujayralarining miqdori)

Tekshirilganlar guruhi	Tekshirilganlar soni	Qondagi zamburug‘ hujayralari miqdori		
		Normal	Oshgan	
		1000-6000	6000-9000	9000-12000
Jami	**102**	**23**	**33**	**31**
5 yoshdan 15 yoshgacha bo‘lgan bolalar	34	10	16	5
Bolalar (o‘g‘il bolalar)	11	4	3	2
Qizlar	23	6	13	3
16-55 yoshdagi kattalar	68	13	17	26
Erkak kishilar	27	6	8	9
Ayollar	41	7	9	17

Biz kuzatgan tekshirilgan guruhdagi autoimmun tireoiditning asosiy belgilari gipotireoz belgilari bo‘ldi: yuz shishish, sarg‘ish-oq rang, teri qoplamalarining quruqligi va epidermis qatlamining po‘stlanishi. Sochlarning sinuvchanligi va quruqligi oshishi, to‘kilishining kuchayishi, tirnoqlarning sinuvchanligi oshishi. Ba’zilarining qonida I-II darajali normoxrom anemiya belgilari aniqlandi. Asab-mushak tizimi tomonidan: harakatlar sekinlashgan, holsizlik, uyquchanlik, xotiraning pasayishi. Qalqonsimon bezni palpatsiya qilishda uning II-III darajaga kattalashgani aniqlandi. Diffuz toksik bo‘lmagan zob bilan fizikal tekshiruvda qalqonsimon bezning faoliyati buzilmasdan (bemorning eutireoid holati saqlanib qolgan holda) kattalashgani aniqlandi. Qondagi TTG va qalqonsimon bez gormonlari miqdorini radioimmunologik usul bilan tekshirish natijasi shundan dalolat berdiki, bolalar va kattalardan iborat nazorat guruhida T3, T4 va TTG konsentratsiyasi normal ko‘rsatkichlardan kam farq qildi.

Autoimmun tireoidit va diffuz toksik bo‘lmagan zobda esa bu gormonlar miqdori sezilarli darajada pasayib ketganligi kuzatildi. Qalqonsimon bezning gormon ishlab chiqarish funksiyasi ko‘rsatkichlari va Candida turiga mansub yetilgan zambo‘rug‘ hujayralarining miqdoriy tarkibini solishtirma tahlil qilish ularning to‘g‘ridan-to‘g‘ri bog‘liqligini ko‘rsatdi (2-jadval)

2-jadval

Candida turiga mansub yetilgan zambo‘rug‘ hujayralari, qalqonsimon bez gormonlari va qondagi TTGning miqdoriy tarkibi

qonidagi zamburug‘ miqdori	Tekshirilganlar soni	T3, nmol/l	T4, nmol/l	TTG, MEd/l
Bolalar (5-14 yosh)				
6000 gacha	10	2,2±0,56	97,5±28,7	1,78±0,26
6000-8000	24	1,24±0,51	75,0±34,6	4,44±1,92
Kattalar (15-55 yosh)				
6000 gacha	13	2,38±0,54	105,7±20,36	1.73±0,46
6000-9000	17	!,56±0,56	92,0±29,8	1,36±0.47
9000-12000	26	1,41 ±0,63	83,56±32,8	1.85±0.53
12000 dan ortiq	12	1,39±0,21	76,7±17.1	1,4=0.44

Jadvaldan ko‘rinib turibdiki, bolalar qonida Candida turidagi zamburug‘lar miqdori oshganda T4 gormoni miqdori 76,92% gacha o‘rtacha pasayishi va T3 gormoni miqdori 55,36% gacha sezilarli darajada pasayishi kuzatilgan. Qondagi T4 gormoni miqdori kamaygani sababli, TTG gormoni miqdori normaga nisbatan deyarli ikki barobarga oshgan, bu esa TTG gormonining ko‘payishi bilan bog‘liq bo‘lishi mumkin.

Katta yoshdagi kandidoz tashuvchilarda tireoid gormonlari konsentratsiyasi darajasi qondagi zamburug‘ hujayralari miqdoriga teskari proporsional bo‘ldi: ular 6000 dan 9000 gacha bo‘lganda T3 va T4 gormonlari miqdori pasaygan (T4-87,45%, T3-65,55%), qondagi zamburug‘ hujayralari miqdori 9000 dan 12000 gacha bo‘lganda esa tireoid gormonlari miqdori sezilarli darajada pasaygan (T4-59,4%, T3-79,45%). Qondagi zamburug‘ miqdori 9000-1000 bo‘lgan tekshirilgan guruhdan tashqari, TTG gormoni miqdori normadan sezilarli darajada og‘madi.

Qondagi zamburug‘ miqdori yuqori bo‘lgan bemorlarda (qondagi zamburug‘ hujayralari miqdori 12000 dan ortiq) qalqon bez funksiyasining eng yaqqol o‘zgarishlari aniqlandi. Bu guruhdagi tekshirilganlarda T3 va T4 gormonlari miqdori

ishonchli darajada past bo‘ldi (mos ravishda 58,4 va 72,93), TTG gormoni miqdori esa norma doirasida o‘zgarib turdi.

Tadqiqotlar natijasida qondagi Candida turidagi yetilgan zamburug‘ hujayralari miqdori oshgani sari qalqon bez gormonlari miqdori pasayishi aniqlandi, bunda qondagi tireoid gormonlari miqdorining pasayishi qondagi yetilgan zamburug‘ hujayralari miqdori oshgani sari yaqqolroq kuzatildi.

XULOSALAR.

Shu tariqa, bizning tadqiqotlarimizda qondagi Candida turkumiga mansub yetilgan zambrug‘ hujayralarining normal miqdori qalqonsimon bezning funksional faolligi bilan bog‘liq edi. Qalqonsimon bezning funksional faolligining pasayishi, odatda vaqtinchalik immunitet tanqisligi bilan birga kelib, qondagi zambrug‘ hujayralari miqdorining ortishiga va, balkim, qondagi kandidamikoz infeksiyasi shaklida klinik namoyon bo‘lishiga olib keldi. Qalqonsimon bezning disfunksiyasi, ko‘pincha yod yetishmasligi tufayli boshqa patologiyalar rivojlanishi uchun qulay sharoit yaratishi haqidagi taxmindan kelib chiqib, immuniteti pasaygan kandidoz tashuvchilarda klinik jihatdan yaxshi namoyon bo‘lgan kandidamikoz rivojlanish xavfi yuqori ekanini taxmin qilish mumkin. Bunda zambrug‘ metabolitlarining organizmga toksik-allergik ta’siri asosiy kasallikning kechishini sezilarli darajada og‘irlashtirishi mumkin.

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ZAMONAVIY DUNYODA ROBOTOTEXNIKANING O‘RNI

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ANNOTASIYA

Bugungi kunda yurtimizning iqtisodiy va ijtimoiy ahvolini rivojlantirish yo‘lida qator yangilanishlar qilinayapdi. Bu yangilanishlar kundan-kun hayotimizga tadbiq etilmoqda. Barcha sohalarga zamonaviy texnologiyalar joriy qilinmoqda. Kompyuter dasturlari bilan boshqariladigan dastgohlardan yurtimiz sanoatida keng foydalanilmoqda. Inson hayoti uchun xavfli yoki og‘ir bo‘lgan sohalarda ham kompyuterga asoslangan robotlardan foydalanilmoqda. Ushbu maqolada bugungi kunda zamonaviy dunyoda robototexnikaning o‘rni haqida ma’lumot berilgan.

Многие нововведения, направленные на улучшение экономического и социального состояния нашей страны, внедряются в нашу повседневную жизнь. Во всех отраслях внедряются современные технологии. В частности, на производственных предприятиях широко используются станки, управляемые компьютерными программами. В данной статье представлена информация о роли робототехники в современном мире.

Many innovations aimed at improving the economic and social condition of our country are being introduced into our daily lives. Modern technologies are being introduced in all industries. In particular, machine tools controlled by computer programs are widely used in manufacturing enterprises. This article provides information about the role of robotics in the modern world.

Kalit so‘zlar:

Robototexnika, robot, mashinasozlik, elektrotexnika, informatika, texnologik jarayon, kasbiy faoliyat, innovatsiya, avtomatlashtirish, ta’lim, ilmiy tadqiqot.

Робототехника, робот, машиностроение, электротехника, информатика, технологический процесс, профессиональная деятельность, инновации, автоматизация, образование, научные исследования.

Robotics, robot, mechanical engineering, electrical engineering, computer science, technological process, professional activity, innovation, automation, education, scientific research.

Biz avtomatlashtirish tezligi ta’sirchan bo‘lgan zamonda yashayapmiz. Hozira avtomatlar odamlar bajaradigan vazifalarni tezroq va yaxshiroq bajaradi. Ba’zilar ko‘plab faoliyat sohalarida, ayniqsa ishlab chiqarish va sanoatdagi jarayonlarning to‘liq avtomatlashtirilishi ishsizlikning sababi hisoblanadi, deya shikoyat qilishadi. Aslida, bu hamma uchun yangi imkoniyatlar to‘lqini. Ushbu qurilmalar qanchalik ko‘p funksional bo‘lmasin, ularni ishlab chiqish, takomillashtirish, ta’mirlash va texnik xizmat ko‘rsatish kerak, shuning uchun buni amalga oshiradigan mutaxassislarga ehtiyoj bor.

Robototexnika - bu mashinasozlik, elektrotexnika va informatika fanlarini birlashtiradigan soha. Bu sohada talabalar robotlarni loyihalash, qurish va ulardan foydalanish, shuningdek ularni boshqarish, fikrlar va ma’lumotlarni qayta ishlash uchun kompyuter tizimlarini o‘rganadilar.

Robot so‘zining etimologik kelib chiqishi Chexiya tilidan ko‘proq yoki kam emas. Xususan, ikki atamaning birlashmasida: robota "majburiy mehnat" sifatida belgilanishi mumkin va ichida rabota "servitut" bilan sinonim. Xuddi shu tarzda, shuni ta’kidlash kerakki, unga ko‘proq yoki kamroq murojaat qilingan birinchi marta 1920 yilda yozuvchi Karel Kapekning "Rossum universal robotlari" nomli asarida bo‘lgan.

Zamonaviy dunyoda robototexnika hayotimizda muhim o‘rin egallaydi. U bir qator sohalarda qo‘llaniladi va turli xil imkoniyatlar yaratadi. Quyida shular haqida keltirib o‘tamiz:

Sanoat: Robototexnika ishlab chiqarish jarayonlarini avtomatlashtirishda keng qo‘llaniladi. Ular yig‘ish, paketlash, va sifat nazorati kabi vazifalarni bajarish orqali ishlab chiqarish samaradorligini oshiradi.

Tibbiyot: Robotlar jarrohlik operatsiyalarini aniqlik bilan amalga oshirishda, bemorlarni parvarish qilishda va diagnostika jarayonlarida yordam beradi. Masalan, da Vinci jarroh robotlari murakkab jarrohlik amaliyotlarida qo‘llaniladi.

Transport va logistika: Avtomatlashtirilgan transport vositalari (masalan, o‘z-o‘zini boshqaradigan avtomobillar) va ombor robotlari yuklarni tez va samarali tashishda yordam beradi.

Qishloq xo‘jaligi: Robotlar ekinlarni parvarishlash, yig‘im-terim qilishda qo‘llaniladi, bu esa qishloq xo‘jaligi jarayonlarini samarali qilishga yordam beradi.

Xavfsizlik: Robotlar xavfsizlik nazorati va monitoring jarayonlarida ishlatiladi. Ular xavfli hududlarda insonlar o‘rnini bosish orqali xavfsizlikni oshiradi.

Kundalik hayot: Uy robotlari (masalan, tozalash robotlari, oshxona robotlari) odamlarning kundalik ishlarini yengillashtirishga yordam beradi.

Ta’lim va ilmiy tadqiqotlar: Robototexnika ta’lim jarayonida foydalanilmoqda. Talabalar uchun dasturlash va muhandislik ko‘nikmalarini rivojlantirishda robotlar yordam beradi.

Robototexnikaning rivojlanishi odamlar hayotini osonlashtirish, samaradorlikni oshirish va yangi imkoniyatlar yaratishda davom etmoqda. Biroq, shu bilan birga, bu texnologiyalarning etik va ijtimoiy jihatlarini ham inobatga olish zarur, chunki ularning ish joylariga ta’siri va ijtimoiy hayotga ta’siri muhim masalalardir.

Har bir sohada robototexnika innovatsiyalar va yangi imkoniyatlar yaratishda davom etmoqda, bu esa inson hayotini yengillashtirishga va samaradorlikni oshirishga xizmat qiladi.

Robototexnika ko‘plab sanoat tarmoqlarida keng tarqalgan. Quyida asosiy sanoat tarmoqlarini keltirib o‘tamiz:

Sanoat ishlab chiqarishi:

- Avtomobil sanoati: yig‘ish liniyalarida robotlar avtomatlashtirilgan ishlarni bajaradi.
- Elektronika: komponentlarni yig‘ish va sifat nazorati jarayonlarida qo‘llaniladi.

Tibbiyot:

- Jarrohlik: jarrohlik robotlari murakkab operatsiyalarni bajarishda ishlatiladi.
- Reabilitatsiya: bemorlar uchun yordamchi robotlar va protezlar.

Qishloq xo‘jaligi:

- Ekinlarni parvarish qilish, yig‘im-terim va pestitsidlarni tarqatishda robotlar keng qo‘llaniladi.

Transport va logistika:

- O‘z-o‘zini boshqaradigan avtomobillar va dronlar.
- Ombor robotlari yuklarni tashishda va tartibga solishda yordam beradi.

Xavfsizlik:

- Xavfsizlik robotlari va nazorat dronlari xavfsizlikni ta’minlashda qo‘llaniladi.

Konsalting va xizmat ko‘rsatish:

- Mijozlarga xizmat ko‘rsatish robotlari, masalan, oshpaz robotlari va qabulxona robotlari.

O‘yin-kulgi va ko‘ngilochar sanoat:

- O‘yin robotlari va virtual reallik tizimlari.

Qurilish:

- Qurilish robotlari materiallarni ko‘tarish va tayyorlashda yordam beradi.

Energetika:

- Energiya ishlab chiqarish va nazorat qilish jarayonlarida robotlar foydalaniladi, masalan, quyosh panellari va yuqori kuchlanishli elektr stantsiyalarida.

Keng kommunikatsiya va IT:

- Dasturiy ta’minot ishlab chiqish va testlash jarayonlarida avtomatlashtirish.

Robototexnika har bir sanoat tarmog‘ida samaradorlikni oshirish, xarajatlarni kamaytirish va xavfsizlikni ta’minlashda muhim rol o‘ynaydi.

Robototexnika bir qator foydalar keltiradi, bu esa uning turli sohalarda qo‘llanilishini ta’minlaydi. Quyida robototexnikaning asosiy foydalari keltirilgan:

Samaradorlikni oshirish:

- Robotlar tez va aniq ishlash imkonini beradi, bu esa ishlab chiqarish jarayonlarini tezlashtiradi.

Xatolarni kamaytirish:

- Robotlar bir xil vazifalarni takroriy ravishda bajaradi, bu esa inson xato qilish ehtimolini kamaytiradi.

Ishlab chiqarish xarajatlarini kamaytirish:

- Avtomatlashtirish jarayonlari ishchilar sonini kamaytirishi, shuningdek, ish vaqtini tejashi mumkin.

Xavfsizlikni ta’minlash:

- Robotlar insonlar uchun xavfli bo‘lgan vazifalarni (masalan, yuqori temperaturali yoki kimyoviy moddalar bilan ishlash) bajarishi mumkin.

Yangi imkoniyatlar yaratish:

- Robototexnika innovatsion texnologiyalarni rivojlantirishga yordam beradi, yangi mahsulotlar va xizmatlarni ishlab chiqarishni osonlashtiradi.

Doimiy ishlash:

- Robotlar 24/7 rejimida ishlay oladi, bu esa ishlab chiqarish jarayonlarining davomiyligini ta’minlaydi.

Muammolarni tezda hal etish:

- Robotlar tezda muammolarni aniqlash va hal qilishga qodir, bu esa jarayonlar samaradorligini oshiradi.

Ish joylarini yangilash:

- Robotlar ko‘plab oddiy va takroriy ishlarni bajaradigan xodimlarni yangi, yuqori malakali ish joylariga o‘tishga yordam beradi.

Ta’lim va trening:

- Robototexnika ta’lim sohasida yangi ko‘nikmalarni o‘rganishga yordam beradi, talabalar uchun amaliy tajribalar yaratadi.

Ekologik samaradorlik:

- Robotlar energiya va resurslarni samarali ishlatish orqali ekologik ta’sirni kamaytirishga yordam beradi.

Robototexnika, shuningdek, rivojlanayotgan texnologiyalar va innovatsiyalar orqali jamiyatda ijobiy o‘zgarishlarga olib kelishi mumkin. Biroq, bu texnologiyalarning etik va ijtimoiy jihatlarini ham e’tiborga olish zarur.

Demak robototexnika - bu og‘ir, zerikarli va xavfli ishlarni bajarishda odamni almashtirish uchun murakkab texnologik jarayonlar va operatsiyalarni, shu jumladan, deterministik bo‘lmagan sharoitlarda olib boriladigan ishlarni avtomatlashtirish uchun mo‘ljallangan robotlar va robot tizimlarini yaratishga yo‘naltirilgan fan. Kasbiy faoliyat ob’ekti robotlar va ishlab chiqarish uchun ham, noishlab chiqarish maqsadlar uchun robotik tizimlar, shuningdek, bunday tizimlarni boshqarish, ularning dizayni va ishlashini boshqarish uchun zarur dasturiy ta’minot va algoritmik yordamdir.

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TABIIY INGREDIENTLAR ASOSIDA POVIDLO TAYYORLASH TEXNOLOGIYASINI ISHLAB CHIQISH

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ANNOTATSIYA

Maqolada ingredientlarning turlarini morfobiologok tavsifi, bioximik tarkibi va inson organizmi uchun foydali xususiyatlari, hamda ulardan foydalanib qayta ishlash sanoatida shifobaxsh mahsulotlar tayyorlash xususan “povidlo” tayyorlash texnologiyasi, uni uni foydali xususiyatlari va ahamiyati hamda iste’molchilarning povidlo mahsulotlariga ehtiyojini ma’lum miqdorda bo‘lsa ham qondirishdan iborat.

Kalit so‘zlar: *ingredient, konsentrat, assortiment, mahalliy mevalar, povidlo, kislotalilik darajasi, avitaminoz, vitaminlar.*

DEVELOPMENT OF A TECHNOLOGY FOR THE PRODUCTION OF JAM BASED ON NATURAL INGREDIENTS

ABSTRACT

The article provides a morphobiological description of the types of ingredients, their biochemical composition and beneficial properties for the human body, as well as the preparation of medicines using them in the processing industry, in particular the “jam” technology. Preparation, its beneficial properties and significance, as well as the need of consumers for jam products in certain quantities should also be satisfied.

Keywords: *ingredient, concentrate, assortment, local fruits, jam, level of acidity, avitaminotic, vitamins.*

1.Kirish

Bozor iqtisodiyotiga o‘tish davrida yangi korxonalarning barpo etilishi, assortimentning o‘zgarishi ehtiyojdan kelib chiqqan holda amalga oshirilmoqda.

Konservalangan mahsulot ichki bozorni to‘ldirish, qo‘shni mamlakatlarga eksport qilish uchun ishlab chiqilmoqda. Mahsulotning ayrim turlari Evropa bozoridan mustahkam o‘rin olgan va respublikamiz uchun yaxshi daromad keltirmoqda. Bular: tomatdan tayyorlangan pyure va pasta, bo‘laklab quritilgan tomat (pomidor), piyoz, o‘rik, olma, shaftoli; butun quritilgan o‘rik, olxo‘ri, uzum mevalaridir; shuningdek, olma, uzum, anor sharbati va kontsentratlaridir.

Yuqori sifatli konserva mahsulotlari ishlab chiqarish, xom ashyoning isrof bo‘lishiga yo‘l qo‘ymaslik hamda xo‘jalik a’zolarining transport xarajatini kamaytirish maqsadida konserva korxonalari bevosita xo‘jalik hududida quriladi. Qayta ishlash chiqitlari xo‘jalikning o‘zida qoladi va chorvani boqishda foydalaniladi.

Korxonada ishga xo‘jalik aholisi jalb etiladi. Mahsulot assortimenti: meva va sabzavot sharbatlari, kompot va murabbolar, sabzavot va meva marinadlari, gazak konservalar, tuzlamalar va quritilgan mahsulotlardan iborat.

Organizmga zarur va oziq-ovqat mahsulotlari tarkibida mavjud bo‘lgan barcha moddalarni shartli ravishda uch guruhga (odamning energiyaga bo‘lgan ehtiyojini qondiradigan energetik moddalar; hujayralar va to‘qimalar tuzilishiga sarflanadigan plastik moddalar; almashinuv jarayonlarida qatnashadigan idora etuvchi moddalarga) bo‘linadigan bo‘lsa, shu moddalarning birinchi toifasi (uglevodlar va qisman yog‘) ham, ikkinchi toifasi (oqsil va mineral moddalar) ham, uchinchi toifasi (mikroelementlar, vitaminlar, fermentlar) ham bor deb xulosa qilinadi.

Respublikamiz qishloq xo‘jalik mahsulotlarini qayta ishlash sohasining hozirgi bosqichdagi asosiy vazifalari: xom ashyo etishtiriladigan joylarda zamonaviy qayta ishlash tsexlari va zavodlarini barpo etish, dunyo bozorida konserva mahsuloti assortimenti va miqdori mavqeini mustahkamlash, kelajak uchun real istiqbol rejaga ega bo‘lishdir. Korxonaning rivojlanishi, uning rivojlanishini yuqori organlar tomonidan boshqarish mexanizmi shakllanishi kerak.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Funksionala ingridentlar - tarifnomal moddalar, tabiiy manbalar, sog‘liq uchun foydali moddalar bo‘lib, asosiy guruhlari probiotiklar, oraliq mahsulotlar, bioaktiv birikmalar, vitaminlar, mineraller va ozuqa tolalari hisoblanib, ular biologik faol, hazmlanish darajasi yuqori, qabul qilish oson va sog‘liq uchun foydali bo‘lishi kerak. Ulardan foydalanish uchun yaxshi sifat va xavfsizlik standartlariga javob berish shart.

Bugungi kunda funksional ingredientlar keng tarmoq sohalarda foydalanilmoqda va turli kasallikalarni davolashda va yangi turdagi mahsulotlarni ishlab chiqarishning asosi bo‘lib xizmat qilmqoda.

Ovqat sanoatida qo‘llanishi. Funksional ingridientlar oziq-ovqat mahsulotlarining ta’miga, konsistensiyasiga va saqlanish muddatiga ijobiy ta’sir ko‘rsatadi.

Foydali xossalarni oshirish. Ular odam salomatligiga foydali xususiyatlarga ega bo‘lgan moddalarni qo‘shadi.

Yangi mahsulotlar yaratish. Funksional ingridientlar yangi oziq-ovqat va ichimliklar yaratishga yordam beradi.

Innovatsion yechimlar. Ular sanoat uchun yangi imkoniyatlar va mahsulotlar yaratishga yordam beradi.

Tabiiy ingredientlardan foydalanib kimyoviy mahsulotlar o‘rnini bosuvchi povidlo texnologiyasini ishlab chiqish muhimdir. Chunki hozirgi kunda kimyoviy qo‘shimchalar bilan boyitilgan mahsulotlar juda ham ko‘p. Bu esa inson salomatligiga salbiy ta’sir qilinishi natijasida aholi orasida ortiqcha vazn, qandli diabet, ayniqsa bolalarda kamqonlik, xotiraning pasayishi kabi turli kasalliklar soni yildan yilga ortib bormoqda. Buning oldini olish hamda kasalliklar sonini kamaytirish uchun albatta tabiiy xomashyodan tayyorlangan mahsulotlar iste’molini kengaytirmoq zarur. Bundan tashqari qishloq xo‘jalik mahsulotlaring mavsum davomida isrof bo‘lishining oldini olish muhim hisoblanadi. Pishib yetilgan mavsumiy mevalar vaqtida eksport qilinmasa yoki qayta ishlanmasa o‘zining biologik holati buziladi va iste’molga yaroqsiz holatga keladi. Buning oldini olish uchun esa ularni qayta ishlab quritish yoki konserva maxsulotlarini jumladan, (povidlo) tayyorlash zarur. Povidlo - ishqalangan meva va rezavor massasidan qand qo‘shib bug‘latib olingan mahsulot. U yangi yoki sulfitlangan xomashyo pure ko‘rinishida konservalangan YaTM dan tayyorlanadi.

1-rasm. Sanoatda ingredient olishda foydalaniladigan xomashyolar

Tabbiy ingredientlarnig normal nisbati tabiiy ekstrakt xom ashyosi ishlab chiqarishdagi asosiy xom ashyo bo‘lib, oziq-ovqat qo‘shimchalari, funksional oziq-ovqat va boshqa sohalarda keng qo‘llaniladi. Kimyoviy moddalarning nisbiy zaharliligi va ularning ishlab chiqarilishini kamaytirib uning o‘rnini bosuvchi tabiiy ekstraktlarni ko‘paytirib ommalashtirish muhim.

NATIJALAR

Povidlo tayyorlash uchun turli danakli xomashyo hamda klukva, olma, belli ishlatiladi. Odatda, povidlo biror bir yagona xomashyodan, ba’zan meva va rezavoriar aralashmasidan ishlab chiqariladi. Nok va sabzavot puresi qo‘shilmaydi. YaTM dan

povidlo ishlab chiqarishda u fini-shordan o‘tkaziladi, so‘ng ochiq apparatlarda 10÷15 daqiqa isitish usuli bilan sulfitsizlanadi, $S0_2$ miqdori 0,025 % ga tushiriladi. Tayyor povidlo tarkibida $S0_2$ miqdori 0,01%dan ko‘p bo‘lishi mumkin emas.

Agar pure nordon benzoy natriysi yoki sorbin kislotasi bilan konservalangan boTsa u holda konservant chiqarib tashlanmaydi.

Povidlo masallig‘i tayyor mahsulot konsistensiyasiga talab asosida tanlanadi. Mahsulot konsistensiyasi, o‘z navbatida, u qadoqlanadigan idishga bog‘liq. Bochka yoki bankalardagi povidlo quyuq, surtiladigan massa. Yashichikdagi povidloning konsistensiyasi shunchalik quyuqki, uni hatto pichoq bilan ham kesish mumkin.

Surtiladigan povidlo ishlab chiqishda, qand massasi bo‘yicha bir hissaga 1,25 hissa 11% quruq moddali pure qo‘shiladi. Konsentratsiyasi past bo‘lgan pure ll %li hisoblanadi.

Labaratoriya sharoitida tabiiy ingredientlarga asoslanib tayyorlangan konsentrat vitaminga boy bo‘lib, quvvat kamayganida va avitaminoz vaqtida yordam beradi, hamda immun tizimini va modda almashinuvini yaxshilaydi.

Konservalangan povidlo shifobaxshligi bilan keng tarqalgan. Bundan tashqari qiyom, jele, likyor, alkogolsiz ichimliklar, va boshqalarning ishlab chiqarilishida tabiiy ingredientlardan foydalanish ishlab chiqarilgan konsentratlarning o‘ziga xos ta’m berishi bilan ajralib turadi.

1-jadval

Olma, o‘rik oixo‘ri mevalaridan ingredientlar asosida “povidlo” tayyorlash usuli va sifat ko‘rsatkichlari.

Meva navla-ri	Mahsulot miqdori	Qandlilik darajasi, %	Kislotalilik darajasi, %	Suv sarfi	Qaynatish harorati, t^0C	Qaynash vaqti, min.	Qo‘shilgan mahsulot, gr	Tayyor povidlo, ml	Shirinlilik darajasi, ball.
Olma	1.0	18.6	2.3	1.0	100	30	700	600	8.1
O‘rik	1.0	15.7	2.3	1.0	100	30	800	600	6.8
Olxo‘ri	1.0	12.6	2.4	1.0	100	30	1000	600	5.2

Tadqiqot olib borish uchun, uch xil mevadan bir kilogrammdan ajratib olindi. Ajratib olingan maxsulot saralanib chiqindilardan tozalandi va tayyor maxsulot bir litr miqdorida texnologik suv qo‘yib 100 ºC haroratda10÷20 minut davomida qaynatildi.

MUHOKAMA

Qaynatilgan massa tindib mevaning turiga uninig tarkibi va qand va kislotalilik darajasiga qarab 700÷1000 gramm miqdorida shakar qo‘shib, qayta 100 C haroratda 10÷20 minut davomida qaynatilib, hosil bo‘lgan povidloni kichik sig‘imli sitirillangan idishlarga qadoqlandi. Tayyor bo‘lgan massamizni salqin va quruq joyda 8÷9 oy saqlash mumkin.

XULOSA

Xulosa qilib aytganda, tabiiy ingredientlar asosida tayyorlangan povidloning kimyoviy tarkibi, tayyorlanish texnologiyasi, texnologik sxemasini, saqlash usullarini o‘rganish hamda ularni yanada takomillashtirish, hamda aholiga kimyoviy qo”shimchalarsiz odam organizmi uchun salbiy ta’sirga ega bo”lmagan salomatlik uchun foydali maxsulotlarni yetkazib berish muhim vazifa hisoblanadi. Tabiiy xomashyo istemolini ko‘paytirish va iqtisodiy samaradorlikga erishishdan iborat. Bunday tayyorlangan konsentratlar shifobaxshlik xususiyatlari va konservalangan maxsulotlarni ishlab chiqarishdagi sifat ko‘rsatkichlariga hamda iqtisodiy samaradorligiga sezilarli ta’sir etadi. Funksional ingridentlar oziq-ovqat sanoatida, farmatsevtika va kosmetika mahsulotlarida keng qo‘llaniladi. Ular oziq-ovqatlar va dorilarning foydali xossalarini oshirish, shuningdek, ularning sifatini yaxshilash uchun ishlatiladi.

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UZLUKSIZ ISHLAYDIGAN OZUQA ARALASHTIRGICHLAR KONSTRUKSIYALARI TAHLILI

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Annotatsiya: *maqolada uzluksiz ishlaydigan ozuqa aralashtirgichlar bo‘yicha umumlashtirilgan tahlil bayon etilgan.*

Kalit so‘zlar: *ozuqa, aralashtirgich, qopqoq, shnek, val, korpus, rama, motor, quvvat, spiral tasma, aralashma sifati.*

Kirish. Mamlakatimiz iqtisodiyotini barqaror rivojlantirishda, qishloq xo‘jaligining o‘ta muhim yo‘nalishlaridan biri hisoblangan chorvachilik tarmog‘ida ozuqalarni yedirishga tayyorlashda dunyodagi ilg‘or tajribalar hamda zamonaviy texnologiyalar va ilm-fan yutuqlarini amaliyotga joriy etish, chorvachilik tarmog‘ini iqtisodiy samaradorligi va raqobatbardoshligini oshirishda muhim ahamiyat kasb etadi.

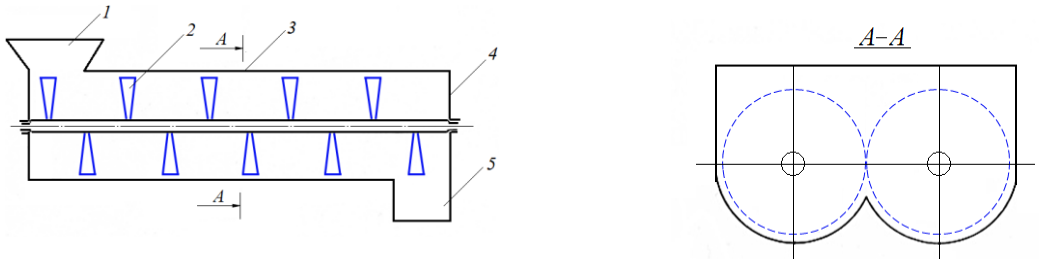
To‘yimli ozuqa bilan oziqlantirish – chorva mollarining mahsuldorligini oshirishda, tirik vaznining o‘sishida, ozuqalardan tejamli foydalanishdagi (40% va undan yuqori) asosiy yo‘llaridan biri bo‘lib, rentabellikning o‘sishini ta’minlashi asoslab berilgan [1; 112-117-b., 2; 326-341-b., 3; 66-73-b.].

Ozuqa aralashmasini tayyorlashda eng oxirgi texnologik jarayon- bu davriy va uzluksiz ishlaydigan aralashtirgichlarda ozuqa komponentlarini aralashtirishdir.

Ozuqa aralashmasini tayyorlashga mo‘ljallangan uzluksiz ishlaydigan aralashtirgichlarning amaldagi mavjud konstruksiyalarini ishchi qismi tuzilishiga ko‘ra quyidagilarga ajratish mumkin: barabanli, barabanli-qorigichli va qorigichli.

Ikki valli uzluksiz ishlaydigan aralashtirgich asosan yarim silindrik ko‘rinishdagi korpus 4, uning ichiga qanotchalari shneksimon qilib joylashtirilgan ikkita val 2 o‘rnatilgan. Vallar bir-biriga qarama-qarshi yo‘nalishda aylanma harakat qiladi. Ozuqalar vallarning qanotchalari yordamida bir necha marta yuqoriga uloqtirish va uloqtirilgan massaning aralashtirgich qopqog‘i 3 dan urilib qaytishi natijasida ozuqa zarrachalarining tartibsiz ravishda harakatlanishi hisobiga aralashadi va chiqarish bo‘g‘izi 5 tomon yo‘naltiriladi. Vallarga qanotchalar 45° burchak ostida o‘rnatilgan bo‘lib, ular xuddi shnekni qirqib chiqilganday ko‘rinishda bo‘ladi. Aralashtirgich

quyidagi parametrlarga ega: umumiy uzunligi-2,8 m; ishchi uzunligi-1,8 m; vallarning aylanish chastotasi-275 min^{-1}. Aralashmaga kiritilgan nazorat qilinuvchi komponentning notekislik darajasi maydalangan dag‘al ozuqa, silos va ildizmevali ozuqalar bilan kombikorma va oziqaviy suyuqliklarni aralashtirganda mos holda 18,9; 26,7; va 26,9 % ni tashkil etgan, aralashtirgichning ish unumi esa mos holda 23,8; 29,4 va 39,1 t/s bo‘lgan [4; 133-156-b., 5; 83-84-b.] (1-rasm).



1- kiritish bo‘g‘izi; 2 –qanotchali val; 3 –qopqoq; 4 – korpus; 5 –chiqarish bo‘g‘izi

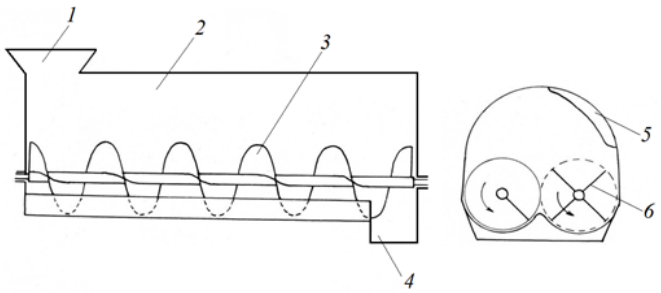
1-rasm. C-30 ikki valli aralashtirgich sxemasi

Bunday turdagi aralashtirgichlardagi asosiy kamchilliklardan biri ishchi organning yuqori qismida aralashtirish jarayonini jadallashtirib beradigan fazoviy bo‘shliq yo‘qligidir.

Kombinatsiyalashgan ishchi organli aralashtirgichlarni universal aralashgichlar guruhiga kiritish mumkin. Bunga misol qilib biter-shnekli aralashtirgichni keltirish mumkin (2-rasm).

Aralashtirgichning konstruktiv ahamiyati shundaki, ikki turdagi ishchi organ uzluksiz shnekdan 3 va kurakchali biterdan 6 tashkil topganligi bo‘lib, ular bir tomonga qarab aylanma harakat qiladi. Bunda ularning harakatlanish xududlari bir-birini kesib o‘tmaydi. Ishchi organlarning harakatlanishi alohida-alohida yuritmalarda bo‘lganligi, berilayotgan ozuqa turlarining fizik-mexanik xususiyatiga qarab ishchi organlarning mos bo‘lgan rejimini tanlash imkoniyatini beradi.

Aralashtirgichning ishlash prinsipi quyidagicha: oldindan tayyorlangan (maydalangan) ozuqalar uzluksiz ravishda(oqimli) yuklash bo‘g‘izi orqali shnekga uzatiladi. Shnekga tushishi bilan ular aralashtirgich korpusi bo‘yicha bo‘ylamasiga siljitiladi hamda biter joylashgan qismiga uloqtiriladi. Uloqtirilgan ozuqa massasi biterga tushishi bilan markazdan qochma kuch ta’sirida aralashtirgichning ichki sirti bo‘yicha harakatlanib yana shnekga qaytib tushadi va qaytadan yangi ozuqa bilan biterga uzatiladi.



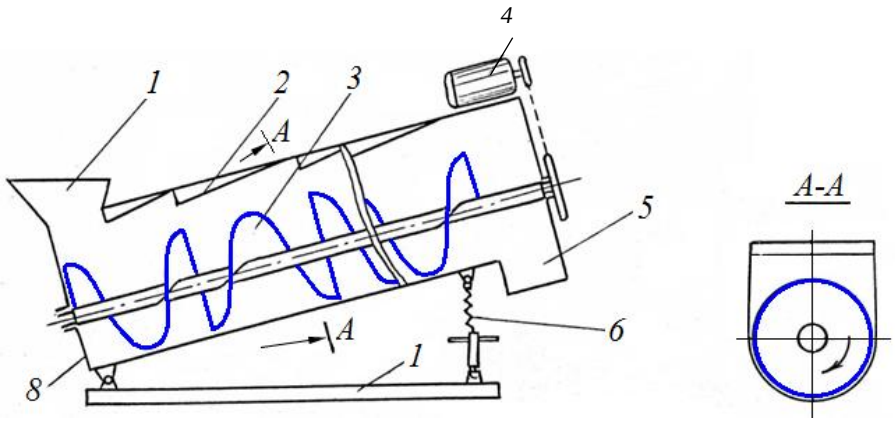
1 – kiritish bo‘g‘izi; 2 – korpus; 3 – shnek; 4 –chiqarish bo‘g‘izi; 5 – oqim bo‘lgich-yo‘naltirgichli qopqoq; 6 –qanotli biter

2-rasm. Kombinatsiyalashgan ishchi organli (biter - shnekli) universal aralashtirgich sxemasi:

Aralashtirgich qopqog‘ining ichki sirtida oqim bo‘lgich-yo‘naltirgichi (talab bo‘yicha uning yo‘nalishini o‘zgartirish mumkin) 5, ozuqa massasi oqimini qismlarga bo‘lib, aralashtirish jarayonini jadallashishiga yordam beradi. Ozuqa massasining ishchi organlar o‘rtasida bir necha bor almashishi natijasida ozuqalarning aralashish xususiyati yaxshilanadi. Ozuqa aralashmasini tayyorlashda aralashtirgich ish unumi yirik shoxli chorva mollari uchun shnekning aylanish chastotasi 200-210 min^{-1}, biterniki 500 min^{-1} bo‘lganda 20-22 t/s ni tashkil etadi [4; 133-156-b.].

G. G. Musayelyans va E. M. Pogosyanlar [6; 47-51-b.] tomonidan taklif etilgan aralashtirgich kiritish va chiqarish bo‘g‘izlariga ega bo‘lgan korpusdan, navbatma-navbat bir qadamga uzilgan ikki kirimli shnek va qaytaruvchi plastinkalarga ega bo‘lgan qopqoqdan iborat (3-rasm).

Aralashtirgich korpusi kiritish bo‘g‘izi tomonidan sharnirli va chiqish bo‘g‘izi tomonidan shnekli mexanizm orqali ramaga mahkamlangan. Shneklardagi navbatma-navbat bir qadamga uzilgan qismining mavjudligi ozuqalar oqimining qisqa vaqtga bo‘lsada navbatma-navbat uzilishini ta’minlaydi.



1 – yuklash bo‘g‘izi; 2 – qaytargichli qopqoq; 3 – shnek; 4 – elektrodvigatel; 5 – chiqarish bo‘g‘izi; 6 – vintli rostlash mexanizm; 7 – rama; 8 – korpus

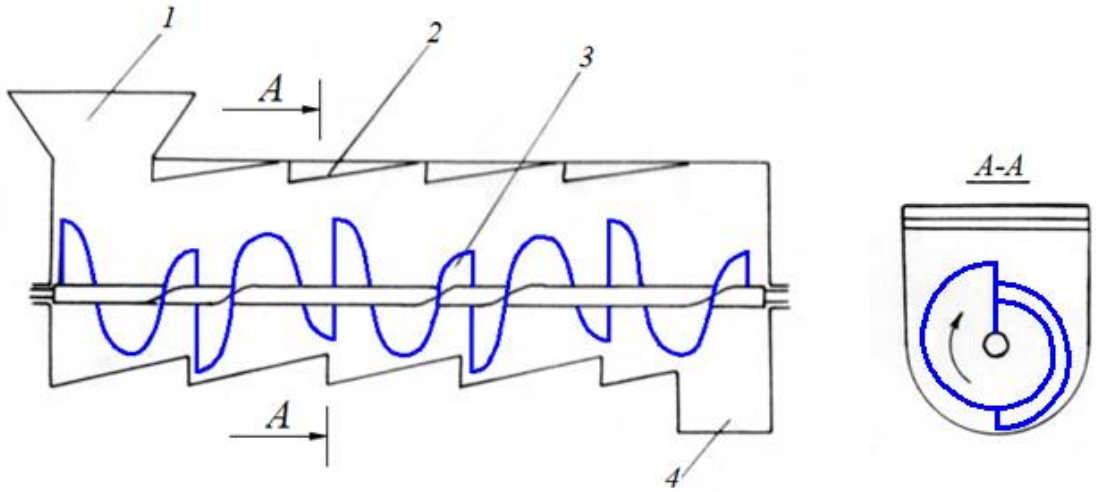
3-rasm. O‘ram qadami uzilishli shnekli aralashtirgich sxemasi

To‘xtab qolgan ozuqa oqimi keyingi qismi bilan birgalikda ilgarilanma va aylanma harakat qiladi. Ozuqalar shnek ta’siridan chiqish vaqtida yuqoriga qarab uloqtiriladi. Shnekdan uloqtirilgan ozuqa massasi qaytargich plastinkalariga ega bo‘lgan qopqoqqa borib o‘riladi. Qaytargichlar qopqoq tekisligiga nisbatan ma’lum burchakda joylashtirilganligi sababli unga kelib urilgan ozuqa massasini chiqish bo‘g‘izi tomonga yo‘naltiriladi. Natijada shnekdan uloqtirilgan ozuqa komponentlari shnek ta’siridan chiqqandan keyin ham aralashish bilan birga chiqarish bo‘g‘izi tomon harakatlanishda ham bo‘ladi.

Aralashtirgich quyidagi konstruktiv va texnologik parametrlarga ega: ishchi uzunligi 2 m, ikki kirimli shnek diametri 0,4 m, shnek o‘rami qadami 0,4 m, shnek uzilish oralig‘i 0,4 m, shnekning aylanish chastotasi 180-225 min^1, massasi 640 kg. Aralashmaning bir tekisligi quyidagicha: senaj bilan somon 90,21-94,62 %; senaj bilan paxta chigiti qobig‘i(shulxa) 90,7-93,9 %; senaj bilan kombikorma 88,38-93,8 %; pichan bilan somon 88,2 % [15; 83-84-b.].

Boshqa bir uzluksiz ishlaydigan shnekli aralashtirgich [16; 49-51-b.] kojuxi pastki qismi yarim konuslarni ketma-ket biriktirilgan ko‘rinishda va yon tomon 5 lardan tashkil topgan (4-rasm).

Korpusda ko‘p kirimli shnek 3 o‘rnatilgan, shnek o‘ramlari bir qadam uzunligida navbatma-navbat uzilgan bo‘lib, bir-biriga nisbatan 180° ga siljitilgan. Shnekning har bir o‘rami radiusi kichik tomoni chiqish bo‘g‘izi tomonga kichiraytirilib borilgan, ya’ni konus ko‘rinishida yasalgan. Oldingi ko‘rib o‘tilgan konstruksiyalar kabi bu aralashtirgich ham qaytargichli qopqoq bilan jihozlangan hamda kiritish 1 va chiqarish 4 bo‘g‘izlariga ega.



1 – kiritish bo‘g‘izi; 2 – qaytargichli qopqoq; 3 – shnek; 4 – chiqarish bo‘g‘izi; 5 – korpus

4-rasm. O‘ram diametri o‘zgaruvchan shnekli aralashtirgich

Bu aralashtirgichning asosiy afzalliklaridan biri aralashtiruvchi organ sifatida ikki kirimli, o‘ramlari navbatma-navbat uzilishga ega bo‘lgan shnek olinganidadir. Bunday ishchi organ boshqa ko‘rinishdagi ya’ni kurakchali yoki oddiy shnekli ishchi organlarga nisbatan yuqori sifatli ozuqa aralashmasini tayyorlashni ta’minlaydi.

Bugungi kunda ozuqa aralashmalarini tayyorlashda xorijiy davlatlarning firmalari va kompaniyalari tomonidan bir necha turdagi uzluksiz ishlaydigan aralashtirgichlar ishlab chiqarilmoqda [7; 8; 9; 10; 405-407-b., 11; 12; 13; 14; 15; 16; 17].

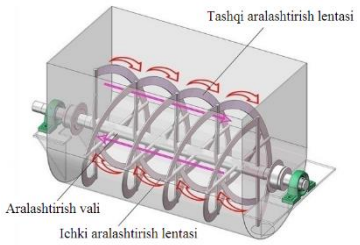
Italiyada WBH tipidagi gorizontal shnekli uzluksiz ishlaydigan bir valli aralashtirgichi [8] yuqori sifatli aralashmalarni olishga mo‘ljallangan (5-rasm). Aralashtirgichning silindrsimon korpusi yon tomoniga bir tomoni sharnerli biriktirilgan ikkinchi tomoni qisqichli bo‘lgan qopqoq mavjud. Aralashtirgichning ishchi vali kurakchalar bilan jihozlangan. Valga kurakchalar tutgich bilan o‘rnatilgan bo‘lib, bu kurakchalarni ehtiyojga qarab ma’lum burchak ostida sozlanishini ta’minlaydi.

5-rasm. WBH tipidagi gorizontal shnekli uzluksiz ishlaydigan aralashtirgich

Germaniyaning Gericke kompaniyasi tomonidan ishlab chiqarilayotgan GCM tipidagi uzluksiz ishlaydigan aralashtirgich keng assortimentdagi kukunlar, bo‘laklar, granulalar va yopishqoq mahsulotlarni aralashtirish uchun mo‘ljallangan [18]. Aralashtirgich U-shaklidagi yoki silindrsimonli aralashtirish kameralaridan iborat. GCM uzluksiz aralashtirgichlarida radial va o‘qiy aralashtirishning eng maqbul kombinatsiyasi mavjud. GCM arlashtirgichi aralashtirish kamerasida ozuqa aralashmasining bo‘lish vaqti boshqarilishi xususiyati bilan ajralib turadi (6-rasmlar).

6-rasm. GCM tipidagi uzluksiz ishlaydigan aralashtirgich

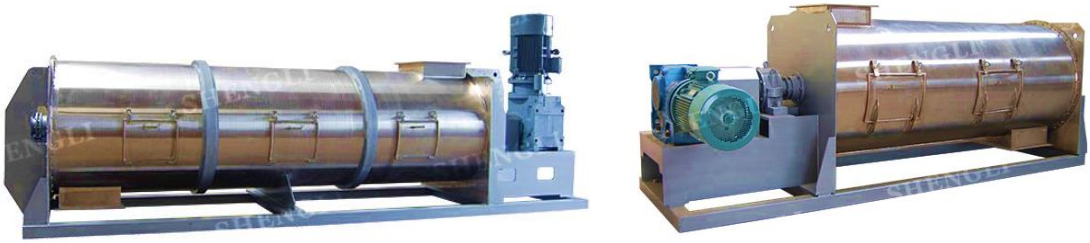
Xitoyning Shandong Dongtai Machinery Manufacturing kompaniyasi tomonidan 100L rusumli uzluksiz ishlaydigan aralashtirgichlar (7-rasm) ishlab chiqariladi [13]. Ular gorizontal ikki spiralli uzluksiz ishlaydigan aralashtirgichlar bo‘lib, quruq kukunli va sochiluvchan ozuqalarni suyuqlik bilan aralashtirishga mo‘ljallangan.



7-rasm. 100 L tipidagi uzluksiz ishlaydigan aralashtirgich

Xitoyning **SHANGHAI Shengli Machinery Co., Ltd** kompaniyasi tomonidan ishlab chiqarilgan CM tipidagi uzluksiz ishlaydigan aralashtirgichi [13] sochiluvchan va granula ko‘rinishidagi materiallarni aralashtirish uchun mo‘ljallangan (8-rasm).

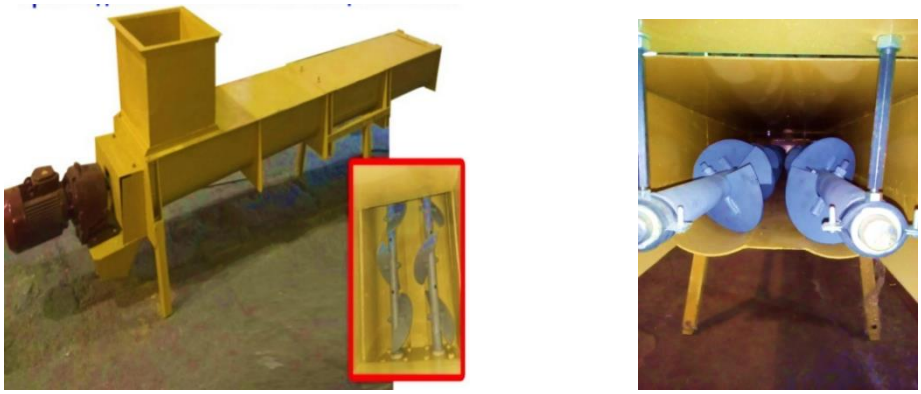
Ish unumi- 5-200 m^3/s, dvigatel quvvati 3-200 kVt/s, umumiy hajmi 0,3-30 m^3. CM seriyali uzluksiz ishlaydigan aralashtirgichi quyidagi tiplarda ham ishlab chiqariladi: CMS (bir valli) uzluksiz ishlaydigan aralashtirgich yoki uni konveyyer sifatida ham foydalanish mumkin va CMD (ikki valli) kurakli uzluksiz ishlaydigan aralashtirgich sifatida foydalaniladi.



8-rasm. CM tipidagi uzluksiz ishlaydigan aralashtirgichlar

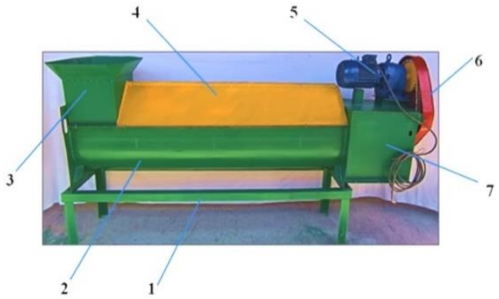
Rossiyaning **«Биоэнергия и К»** kompaniyasi tomonidan ishlab chiqarilgan «Beep» uzluksiz ishlaydigan aralashtirgichi [20] asosiy ozuqa komponentlari, oqsil va vitamin qo‘shimchalari, premikslar va ularning aralashmalarini oqimli aralashtirish uchun mo‘ljallangan (9-rasm).

Aralashtirgichning talab qilinayotgan quvvati - 3 kVt, ish unumdorligi 5 t/soat tashkil qiladi. Shneklar podshipniklarga mahkamlangan ikkita valdir. Pichoqlar sterjenlar, shayba va gaykalar yordamida vallarga o‘rnatiladi. Ularni shayba ichidagi rostlovchi uyalar orqali shnek o‘qiga nisbatan har qanday burchak ostida o‘rnatish mumkin. Komponentlar harakat yo‘nalishi bir-biriga teskari aylanadigan ikkita gorizontal shneklar bilan aralashtiriladi.

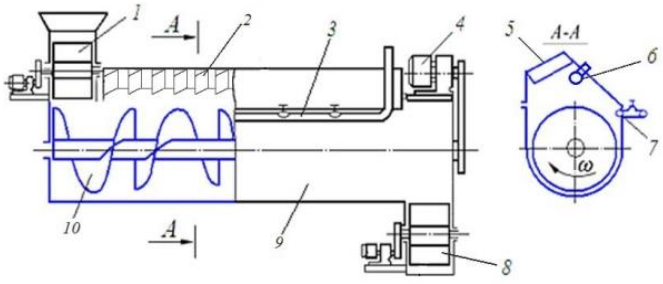


9-rasm. Beep-uzluksiz ishlaydigan aralashtirgichi va uning ishchi organlari

E. U. Eshdavlatov tomonidan taklif etilgan aralashtirgich kiritish va chiqarish bo‘g‘izlariga ega bo‘lgan korpusdan, navbatma-navbat bir qadamga uzilgan ikki kirimli shnek va qaytaruvchi plastinkalarga ega bo‘lgan qopqoqdan iborat (10-11-rasmlar).



10-rasm. Uzluksiz ishlaydigan aralashtirgich.
1 – rama; 2 – korpus; 3 – kiritish bo‘g‘isi; 4 – qopqoq; 5 – motor-reduktor;
6 – himoya qobig‘i; 7 – chiqarish bo‘g‘izi.



11-rasm. Uzluksiz ishlaydigan aralashtirgichning konstruktiv sxemasi
1 va 8 –yuritmali shlyuzlar; 2 – bo‘ylama qaytargichlar; 3-bug‘ uzatish quvuri; 4 – motor-reduktor; 5-qopqoqning ishchi sirti; 6 –suyuqlik purkagich;
7 – bug‘ taqsimlagich; 9-aralashtirgich korpusi; 10-shnek.

Aralashtiruvchi ishchi organ sifatida ikki kirimli o‘ramlari navbatma-navbat bir qadam uzunligida uzilgan shnekning umumiy ko‘rinishi 11-rasmda keltirilgan. Oldingi olib borilgan tahlillarimiz natijalariga ko‘ra uzluksiz ishlaydigan aralashtirgichlarda, kurakchali yoki o‘ramlari butun shnek(shnek)ga nisbatan bunday ishchi organda aralashtirish sifati birmuncha yuqori ekanligi o‘z tasdig‘ini topgan [21; 68-b,115-b.].

Yuqoridagi uzluksiz ishlaydigan aralashtirgichlar tahlillaridan kelib chiqqan holda maydalangan dag‘al va shirali ozuqalar bilan kombikormani hamda ozuqa aralashmasiga kam miqdorda qo‘shiladigan ozuqa qo‘shimchalarini aralashtirishda texnologik jarayonni oqimli usulda bajarilishini, energiya va resurstejamligini, yuqori ish unumi va sifatini taminlaydigan hamda aralashmaga zarur vaqtda issiqlik va suyuqlik kiritish bilan ishlov beradigan uzluksiz ishlaydigan aralashtirgich ishlab chiqish, uning parametr va ish rejimlarini aniqlash bo‘yicha tadqiqotlar olib borish maqsadga muvofiqdir.

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ZARAFSHON-OLOY KAMARI NODIR VA KAMYOB METALLAR MA'DANLASHUVINING METOLLOGENIYASI

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Annotatsiya: *Zarafshon-Oloy kamari nodir va kamyob metallar ma'danlashuvining metollogeniyasini o'rganishda bir qator taniqli olimlar ilmiy izlanishlar olib borishgan va ko'plab formatsiyalarni aniqlagan. Hozirda ham ilmiy izlanishlar olib borilmoqda.Bu esa yangi konlarni ochish uchun kegusida zamin bo'ladi.*

Kalit so'zlar: *Sheyelitli ma'danlar, magmatizm, intruziyalar, mineral assotsiatsiyalar, metallogeniya, formatsiyalar, provinsiyalar, Gidrotermal eritmalar, volfram, ekzokontakt, skarnlar.*

Annotation: *Zarafshan-Aloy n the study of the metallogeny of the mining of rare and Rare Metals, a number of well-known scientists have carried out scientific research and identified many formations. Scientific research is still underway.This would provide ground for the kegusi to open up new mines.*

Keywords: *shale deposits, magmatism, intrusions, mineral associations, metallogeny, formations, provinces, hydrothermal solutions, tungsten, exocontact, scarns.*

Dunyo amaliyotida, foydali qazilmalar geologiyasini o'rganish tarixining barcha davrlarida ma'danlashuvning magmatizm bilan genetik bog'liqligini hamda qamrovchi tog' jinslarini ma'danlashuvning shakllanishi va joylashuvidagi rolini aniqlash muhim ahamiyat kasb etadi. Jumladan, butun dunyoda foydali qazilma konlarini izlab topish, qolaversa, yuqoridagi masalalarni hal etishda keng qo'llaniladigan usullardan biri mineralogik-geokimyoviy tadqiqot usullari hisoblanadi.

Endogen ma’danlashuvning magmatizm bilan aloqasiga oid masalalar ko‘plab tadqqiotchilarning ishlarida ko‘rib chiqilgan. H.M.Abdullayev tomonidan O‘rta Osiyoning endogen nodir metalli ma’danlashuvining intruziyalar bilan genetik aloqasi asoslab berilgan. Keyingi yillarda olib borilgan petrologik, mineral-geokimyoviy va b. tadqiqotlar bilan H.M.Abdullayev, H.N.Boymuhamedov, I.X.Hamroboyev kabi geolog olimlarning ko‘plab g‘oyalarining to‘g‘riligini tasdiqlaganlar.

Xususan, Chaqilkalon tog‘laridagi skarn-sheyelitli, skarn-sheyelit-sulfidli, kvars sheyelit-sulfidli formatsiya qatorlari granodioritli komplekslari bilan Chaqilkalandan Ziyovuddingacha sheyelitli ma’danli rayonni, keyinchalik esa nodir metalli metallogenik provinsiyani hosil qiladi. Zarafshon-Oloy kamari o‘rta va kechki karbonning burmalanish fazalari bilan bog‘liq. Tektonik harakatlar paleozoy oxirida ushbu egikliklarning tutashishiga va kechki gersin burmalanish zonalarining shakllanishiga olib kelgan. O‘zining metallogenik mohiyati bo‘yicha I.H.Hamroboyev (2021), «mufassal» nodir metalli va kamyob ma’danli ixtisoslanishning yetakchi ahamiyati bo‘yicha qo‘shni Zarafshon-Turkiston zonasiga o‘xshash. O‘rganilayotgan hudud Zirabuloq-Qoratepa qalay-volframli kamarga tegishli bo‘lib, uning doirasida skarn-ma’danli konlar va volfram, molibden, qalay, oltin kumushli va polimetalli ma’danlashish namoyon bo‘lishi aniqlangan. Ma’danli rayonlar va provinsiyalarda endogen ma’danlashishning joylashish qonuniyatlarini aniqlashda H.N.Boymuhamedov (1987) tomonidan endogen ma’danlashish joylashishining to‘rtta turi ajratilgan: o‘choq-zonalli, kamarsimon, tugunli va karkas (qobirg‘a)-tugunli. Joylashishning o‘choq-zonalli turi konlarning skarn-magnetitli, skarn-sheyelitli, skarn-molibdenit-sheyelitli, skarn-sulfid-oltin-misli, skarn-polimetalli, greyzen-nodir metalli va boshqa formatsiyalarini hosil qiladi. Ular makon va genetik jihatdan yirik batolitli granitoidli hosilalar bilan bog‘langan.

Kamarsimon joylashish turi nodir metalli-pegmatitli, gidrotermal qalay ma’danli-oltin ma’danli, simob-surmali va boshqa formatsiyalar uchun xosdir. Intruzivli massivlar va tegishli ma’danlashishlar ikkinchi va uchinchi tartibdagi burmalanish strukturalarga, shuningdek, yoriqlar zonasiga bo‘ysungan holda Zarafshon-Oloyning (geologik rivojlanish tarixidan kelib chiqqan holda) magmatizm xususiyati va metallogeniyasining o‘ziga xosligidan ma’danli kamarni hosil qilgan holda o‘nlab, ba’zan esa yuzlab chaqirimlarga cho‘zilib ketgan va foydali qazilmalarning ma’lum turlariga ixtisoslashgan. Joylashishning tugunli turi qo‘rg‘oshin, rux, mis, oltin, flyuorit va mineral xomashyoning boshqa turlarining skarn-gidrotermal, gidrotermal, vulkanogen-gidrotermal konlari uchun xosdir. Ma’danli rayonlarda, ular katta bo‘lmagan intruziyalar va turli tarkibdagi daykalar, vulqonli shtoklar va boshqa hosilalar bilan uzviy assotsiatsiyalangan. Karkas (qobirg‘a)-tugunli joylashish turi rangli, nodir va asil metallarning plutonogen-

gidrotermal va vulqanogen-gidrotermal konlari uchun xosdir. Ular chuqur yoriqlar, burmalanish strukturalarining kichik intruziyalari, daykalar hamda vulqonli markazlar va apparatlari joylashgan yoriqlar bilan kesishish uchastkalarida joylashgan. Volfram (sheyelit) metallogeniyasi.

Skarn-ma'danli konlarning sanoatbop turlari, ularning Zarafshon-Oloy metallogenik kamarining Zirabuloq-Ziyovuddin, Qoratepa va Chaqilkalan ma'danli komplekslariga muvofiq joylashgan Ingichka, Qoratepa, Yaxton va boshqa konlarda gistrukturaviy-teksturaviy o'ziga xosligi ko'rib chiqildi. Mineral tarkibi bo'yicha ma'danlarning asli sheyelitli va sheyelit sulfidli turlari ajratilgan. Oxirgisi orasida ma'danlarning sheyelit-molibdenitli, sheyelit-pirrotin-xalkopiritli, sheyelit-galenit-sfaleritli mineral assotsiatsiyalari ajralib turadi.

Sheyelitli ma'danlar hosil bo'lish shart-sharoitlari bo'yicha eng ertangi bo'lib, ular konlarda turli jadallikda namoyon bo'ladi. Asli sheyelitli ma'danlar ustida sheyelit-sulfidli yoki skarn-sulfid-nodir metalli ma'danlar joylashgan. Sheyelit-sulfidli turdagi ma'danlarda miqdoriy nisbatda sheyelit-pirrotin-xalkopiritli ma'danlar assotsiatsiyasi ustunlik qiladi, ikkilamchi o'zgargan zonalardan olingan monomineral xalkopiritda oltin, shliflarda esa ularning mayda yakka donachalari aniqlangan. Sheyelit-galenit-sfaleritli ma'danlarda kumushning aralashma elementlari miqdori galenitda 19 400 g/t. sfaleritda 100 g/t dan ortiq va 0,01-0,001% vismut va qalay aniqlangan. Bu kabi mayda tomirchalar, daykalarning skarn jismlarini kesib o'tgan holda, oltin ma'danlashish mavjud apogranitli ma'danlarni hosil qiladi[2, 3].

O'rganayotgan hudud (Zirabuloq-Ziyovuddin va Chaqilkalon-Qoratepa ma'danli komplekslar) doirasidagi cho'kindi-metamorfik jinslar orasida gidrotermal o'zgargan laporitlar, dioritli porfirlar, granodiorit-porfirlarning daykalari keng rivojlangan bo'lib, ularda kassiterit, molibdenit, sheyelit, oltin va boshqa minerallarning tarqoq hol-holliklari uchraydi. Kassiteritning sanoatbop darajadagi to'plami faqat o'zgargan lamprofirlarda (Lapas) aniqlangan. O'zgargan dolomitlarda (Qo'chqorli, Qizqo'rg'on, Qizil Gura, Kaltasoy va Lapas) kassiteritning katta ajralishlari aniqlangan. Ketmonchi, Qutchi, Qoramasjid va Burgut pegmatit tomirlarida kassiteritning katta bo'lmagan miqdorlari qayd etilgan[4].

Asosiy ma'dan qamrovchi va ma'anni nazorat qiluvchi strukturalar mayda va yirik uzilmali yoriqlar hisoblanadi va quyidagi qalay ma'danli formatsiyalar ajratiladi: pegmatitli, kassiterit-kvarsli, karbonat-kassiteritli formatsiyalar (Changali, Qarnob, Lapas, Oltinqazg'on va Karmana konlari), shuningdek, kvarsli tomirlar bilan bog'langan bir qator mayda namoyonlar. Qalay-surma metallogeniyasi. Zirabuloq tog'laridagi Kaltasoy ushbu ma'danlanish formatsiyasining yaqqol misoli hisoblanadi. U nordon tarkibli tog' jinslaridan tashkil topgan Zirabuloq intruziv massivining janubiy g'arbiy qismi tomon cho'zilgan. Ular bevosita ma'dan qamrovchi tog' jinslari

- o‘zgargan (skarnlangan, kvarslangan) dolomitlar, ohaktoshlar va slanetslardir. Ma’danli jismlar shtoklar va daykalarning ekzokontaktlari zonasida rivojlangan, tik tushuvchi darzliklarga bog‘langan uncha katta bo‘lmagan tomirlar bilan ifodalanadi. Gidrotermal eritmalardan ajralgan qo‘rg‘oshin surma ma’danlar yotqiziqlari, uzilmalarning antiklinal strukturaning gumbaz qismidagi qiya tushuvchi darzliklar bilan birlashish joylarida sodir bo‘lgan. Boshqa elementlar metallogeniyasi. Metallogenik belgilar hali ko‘p o‘rganilmagan, biroq istiqboli juda yaxshibo‘lgan bazit-ultrabazitli zonalar nikelli, skarn-temir ma’danli, misli, kamyob metalli (pegmatitlar) volframli, qo‘rg‘oshin-ruxli minerallashuv aniqlanadi[4].

Chaqilqalyan tog‘lari volfram va boshqa foydali qazilmalarning namoyonlari va konlari borligi bilan ajralib turadi. Chaqilqalyan tog‘larida volfram ma’danlashuvining hosil bo‘lishini o‘rganish orqali, bizga kelgusida istiqbolli volfram ma’danli tanalarni topishdan darak beradi va davlat zaxirasini boyitadi.

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ATMOSFERA HAVOSINI MUHOFAZA QILISHNING HUQUQIY HOLATI

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Annotatsiya: *Ushbu maqolada atmosfera havosini muhofaza qilishning huquqiy talablari, atmosfera havosini muhofaza qilishga oid xalqaro hujjatlar va qonunchilikka doir ma’lumotlar keltirib o‘tilgan.*

Kalit so‘zlar: *atmosfera, ozon qatlami, ma’muriy javobgarlik, qonunlar, xalqaro hujjatlar.*

Yer kurrasini o‘rab olgan havo qatlami “atmosfera” deyiladi. Atmosfera o‘zining hajmi bo‘yicha yer sayyorasining qolgan qismlaridan bir necha marta katta bo‘lishiga qaramay, uning massasi yer massasidan 0,000001ga yaqin qismini tashkil etadi. Eng toza havo okean suvlari ustidadir. Qishloqlar ustida havodagi chang zarralari miqdori okean yuzasidagiga nisbatan 10 barobar, shaharlar ustida 35 barobar, sanoat korxonalari ustida 150 barobargacha ortiq bo‘ladi. Havoning chang bilan ifloslanishi, asosan yer sathidan 1,5-2 km balandlikkacha kuzatiladi va quyosh nurlarini yozda 20 % ini, qishda 50 % ni tutib qoladi. Yerda hayotning davom etishi, asosan, havoning tozaligiga bog‘liq. Masalan, inson ovqatsiz va suvsiz bir necha kun yashay olishi mumkin, ammo havosiz faqat 5 daqiqagina yashaydi. Toza havo faqat inson uchungina emas, balki hayvonot va o‘simlik dunyosi uchun, shuningdek, antibiotiklar, yarim o‘tkazgichlar, yuqori aniqlikka ega bo‘lgan o‘lchov asboblari ishlab chiqaradigan sanoat tarmoqlari uchun ham zarurdir.

Atmosferaning ifloslanishi deb, bir so‘z bilan aytganda havo tarkibiga begona moddalar va qo‘shimchalarning me’yoridan ortiq to‘planishiga aytiladi. Atmosfera havosining ifloslanishi 2 xil: tabiiy va sun’iy (antropogen) bo‘lishi mumkin. Ifloslanish har qanday modda yoki energiya shaklida bo‘lishi mumkin. Tabiiy manbalarga chang, chang to‘zon, vulqonlarning otilishi, koinot changlari va boshqalar kiradi. Tabiiy manbalardan keladigan ifloslantiruvchi moddalarning 3/4 foizi noorganik genezisga

ega. Tabiiy manbalardan atmosferaga qo‘shilgan turli moddalar ma’lumotlarga qaraganda har yili o‘rtacha 700 mln. tonnadan 1,5 mlrd. tonnagacha tuproq changi, o‘rmonlarning yonishi natijasida 360 mln. tonnagacha turli aralashmalar atmosferaga qo‘shiladi. Ularning jami o‘rtacha 2,3 mlrd. tonnasi aerozolni (havoda muallaq turuvchi qattiq yoki suyuq zarrachalar) tashkil qiladi.

Endi sun’iy, ya’ni antropogen ifloslanish manbalariga keladigan bo‘lsak, sun’iy deganimizning o‘zi bu inson omili natijasida amalga oshiriladigan jarayonlardir. Atmosferaning sun’iy manbalar hisobiga chiqindilar bilan ifloslanishi borgan sari kuchayib bormoqda. Issiqlik elektrostansiyalar tutun bilan birga havoga oltingugurtli va karbonat angidrid gazlar va boshqa birikmalarni, metallurgiya, ayniqsa rangli metallurgiya korxonalari, gaz holida azot oksidlari, vodorod sulfid, uglerod oksid, xlor, ftor, fosfor birikmalari, turli metall zarrachalari, simob va boshqa xuddi shunday chiqindilarni kimyo korxonalari, sement ishlab chiqaruvchi va paxta tozalovchi zavodlar ko‘p chang chiqaradi. Masalan, cho‘yan eritish va undan po‘lat tayyorlash jarayonida 1 tonna cho‘yan eritilganda 4,5 kg chang, 2,7 kg oltingugurtli gaz, 0,5-1,1 kg marganes ajralib chiqadi.

Insonning iflos havoda nafas olishi ko‘pgina ko‘ngilsiz oqibatlarga olib keladi. Inson tabiatning ajralmas bir bo‘lagi sifatida uning musaffoligidan, go‘zalligidan tabiiy boyliklaridan bahramand bo‘lib kelgan. Ayni kunga kelib, toza havo, toza suv tushunchasi nisbiy tushunchalarga aylandi.

Atmosferaning ozon qatlami quyoshning insoniyat uchun, umuman, yer yuzidagi barcha hayvon va o‘simliklar olami uchun o‘ta zararli bo‘lgan ultrabinafsha nurlarini “tutib” qoluvchi asosiy to‘siq vazifasini bajaradi. U yer yuzidan 15-45 km gacha yuqorida joylashgan bo‘lib, sayyoramizdagi hayotni muhofaza qilib turadi. Ozon qatlami quyosh nurlari ta’sirida kislorod, azot oksidi va boshqa gazlar ishtirokida hosil bo‘ladi.

Atmosfera havosini muhofaza qilishning huquqiy chora-tadbirlari haqida O‘zbekiston Respublikasining Konstitutsiyasida va boshqa qonunlarida aytib o‘tilgan. Ular inson hayoti hamda o‘simlik va hayvonot dunyosi uchun qulay atmosfera havosini ta’minlashga qaratilgan. Atmosfera havosini muhofaza qilishning huquqiy chora tadbirlari tashkiliy, iqtisodiy va huquqiy chora tadbirlardan iborat bo‘lib, bular bir-biri bilan chambarchas bog‘liqdir.

Atmosfera havosini muhofaza qilishda texnologik tadbirlarning ahamiyati kattadir. Ko‘riladigan tadbir asosida tashqi muhit obyektlariga, jumladan, havoga tashlanadigan chiqindilar miqdorini qisqartirish yoki mutlaq to‘xtatish zarur. Buning uchun sanoat korxonalaridagi texnologik jarayonlarni takomillashtirish, hatto chiqindisiz yoki kam chiqindili texnologiyalarni joriy etish mumkin.

Birlashgan Millatlar Tashkiloti tomonidan kam chiqindili hamda chiqindisiz sanoat korxonalarini tashkil qilish to‘g‘risida maxsus deklaratsiya qabul qilingan. Bu hujjat asosida BMT Yevropa iqtisodiy hay’atining chiqindisiz va kam chiqindili korxonalar tashkil qilish faoliyatida ko‘p mamlakatlar qatnashmoqda.

Bundan boshqa yana ko‘p shartnoma va tashkilotlar aynan ekologiya va atmosferada yuz berayotgan masalalarni hal etish uchun ko‘plab davlatlar bilan bitim imzolaganlar. Atmosfera havosini muhofaza qilishga doir qonun va qonun osti hujjatlari qabul qilingan bo‘lib, “Atmosfera havosini muhofaza qilish to‘g‘risida”gi qonun hisoblanadi. Atmosfera havosining holatini kuzatish, u haqidagi axborotni to‘plash, umumlashtirish, tahlil etish va istiqbolni belgilash atrof tabiiy muhitning davlat monitoringgi yagona tizimi bo‘yicha qonun hujjatlarida belgilangan tartibda amalga oshiriladi. “Atmosfera havosini muhofaza qilish to‘g‘risida”gi qonun 1996-yil 27- dekabrda qabul qilingan. Bu qonunning 5- moddasiga ko‘ra atmosfera havosini muhofaza qilish sohasida davlat boshqaruvini O‘zbekiston Respublikasi Vazirlar Mahkamasi, O‘zbekiston Respublikasi Ekologiya, atrof-muhitni muhofaza qilish va iqlim vazirligi, mahalliy davlat hokimiyati organlari amalga oshiradilar.

Xulosa qilib shuni aytish kerakki, tabiat bilan inson bir-biriga uzviy bog‘langan. Shu sababdan ham inson uning ne’matlaridan oqilona foydalana olishi kerak. Eng asosiy boyligimiz suv va atmosfera havosi hisoblanadi. Bularni asrash yoki ifloslantirish albatta, insonning o‘ziga bog‘liq. Inson birgina xatosi tufayli boshqalarning sog‘ligiga putur yetkazishi mumkin. Masalan, ayrim odamlarning ko‘chalarga chiqindilarni tashlashi va atrof-muhit tozaligiga e’tiborsizligi oqibatida boshqa kishining sog‘ligiga zarar yetishi va yuqumli kasalliklarni keltirib chiqarishi mumkin. Bunday holatlar kuzatilsa “Atmosfera havosini muhofaza qilish to‘g‘risida”gi qonunning ma’muriy va jinoiy huquqiy javobgarlik kodekslaridan foydalanib ish ko‘riladi.

O‘zbekiston Respublikasi “Ma’muriy javobgarlik to‘g‘risida” gi kodeksning 85-moddasiga binoan: Ifloslantiruvchi moddalar va biologik organizmlarning atmosfera havosiga chiqarib tashlash, unga zararli fizikaviy ta’sir ko‘rsatish yoki atmosfera havosidan belgilangan talablarni buzgan holda foydalanish; 88- moddasida atmosfera havosini muhofaza qilish talablariga rioya qilmaslik uchun ham javobgarliklar ko‘rsatilgan. Yuqorida talablarni buzganlik uchun fuqarolarga eng kam ish haqining uch baravaridan besh baravarigacha, mansabdor shaxslarga esa besh baravaridan o‘n baravarigacha miqdorda jarima solishga sabab bo‘ladi.

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ENRICHMENT OF FLOUR MIXTURES WITH FUNCTIONAL VEGETABLE ADDITIVES FOR PREPARATION OF BAKERY PRODUCTS

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Abstract. *To enrich bread and bakery products, composite mixtures based on barley, buckwheat, oatmeal, amaranth and wheat germ flour are offered.*

The vitamin composition was assessed and the organoleptic properties of flour mixtures were determined, as well as their physicochemical parameters. The use of various ingredients not only enriches the products with useful substances, but also helps to increase the shelf life of the products.

Key words: *bakery products, enrichment, nutrients, flour mixtures, physicochemical indicators.*

INTRODUCTION.

It is known that bakery products are an integral part of the daily diet of the population, regardless of age and social status. The human body receives most of the necessary biologically active substances through the consumption of bread, including essential amino acids, B vitamins, PP, proteins, carbohydrates, mineral elements and dietary fiber.

To date, the Russian Research Institute of the Baking Industry (FGBNU NIIHP) has developed a wide range of bakery products for functional, special and dietary directions [1].

Increasing the nutritional value and functional characteristics of bakery products is achieved by enriching them with natural ingredients and biologically active additives. The use of functional types of bread benefits not only sick people, but also healthy people. Japan is the world leader in functional foods, followed by the USA, Germany and some European countries [2]. In our republic, the demand for functional products has not yet been established. We believe that this is due to insufficient awareness of the population, the high cost of functional bakery products and the lack of government support in the production of such products.

International experience shows that many countries have achieved success in correcting diets and improving public health through the use of functional foods. The inclusion of fortified foods in government programs related to nutrition and public health is vital [3,4].

Bakery products prepared in accordance with traditional recipes satisfy human needs for proteins by 25-30%, carbohydrates by 30-40%, as well as vitamins, minerals and dietary fiber by 20-25%. Therefore, it is important to pay special attention to the nutritional and biological value of these products.

Bread is one of the most common food products among the population. Therefore, adding components with functional properties to its composition can effectively solve the problem of preventing and treating various diseases associated with a deficiency of certain substances.

After analyzing the available scientific literature, we developed methods for preparing flour mixtures for the production of functional food products [5].

METHODS.

To enrich bread and bakery products, composite mixtures are based on the flour of barley, buckwheat, oatmeal, amarantic and germinate flakes of wheat. By analyzing the available scientific literature, we developed methods of cooking flour mixtures for the manufacture of functional food products. Methods for the manufacture of flour mixtures for functional nutritions include the following steps: soaking, scaling, grinding and drying of vegetable raw materials, and then its mixing with the formulating components before achieving a homogeneous consistency.

Methods for the production of flour mixtures for functional food products include the following stages: first, the plant material is soaked in water until completely swollen for at least 12 hours, then germination occurs until sprouts appear at least 1 cm long. After this, the plant material is crushed and dried, and then it is mixed with the prescription components until a homogeneous mass is obtained. The process of soaking and germination of plant materials is carried out at a temperature of 25°C. The swollen mass of plant material is separated from the remaining water, and drying is carried out

using infrared rays with a radiant energy supply of 70 kW/m² and a radiation power of 12 kW.

The plant raw materials used are wheat grains, chickpeas, corn grains, sunflower seeds, oat grains, barley grains, walnuts and sesame seeds.

RESULTS.

Currently, the development of recipes for functional food products through the use of non-traditional sources of raw materials is extremely relevant. In this regard, we used various flours from wheat, rye and amaranth as the main components. The ingredients of the specified flour mixture are selected in accordance with Table 1.

Table 1

Qualitative and quantitative composition of flour mixtures

No.	Component name	Component consumption for preparing samples of flour mixtures		
		No. 1	No. 2	No. 3
1	First grade wheat baking flour, kg	64	28	70
2	Rye flour, kg	8	16	30
3	Amaranth flour, kg	2	18	25
4	Sprouted wheat grains, kg	8	28	32
5	Sprouted chickpeas, kg	4	11	18
6	Sprouted corn grains, kg	2	16	26
7	Sprouted sunflower seeds, kg	4	8	14
8	Sprouted oat grains, kg	2	15	30
9	Sprouted barley grains, kg	2	20	40
10	Sprouted walnuts, kg	2	7	14
11	Sprouted sesame seeds, kg	2	11	22

Individual variations of the functional mixture may also contain cereal flours: sorghum flour, wheat flour, buckwheat, quinoa flour and rice flour.

The variety of flour mixture compositions allows you to create a wide range of products for functional nutrition, including bread, bakery products, pasta, flour confectionery and other culinary delicacies.

The results of analyzes to determine the quantitative and qualitative content of vitamins in the composition of the declared functional flour (No. 1 - No. 3), produced according to the described method, were examined in the Department of Sanitary and Epidemiological Surveillance of the Main Medical Directorate under the Administration of the President of the Republic of Uzbekistan. The obtained data are presented in Table 2.

Table 2

Quantitative and qualitative assessment of the vitamin composition of flour mixture based on samples

No.	The name of indicators	According to ND (GOST 32042-2012)	Prototype (RU 2154945)	Actually		
				sample No. 1	sample No. 2	sample No. 3
1	Vitamin B1 (thiamine), mg/kg, no more	1.3-4.1	1,309	1,410	1.4 9 0	1,568
2	Vitamin B2 (riboflavin), mg/kg, no more	1.8-5.2	1,790	1,904	1,976	2.152
3	Vitamin B3 (nicotinic acid), mg/kg, no more	9.9-29.0	8.87	9.97	10, 190	10,658
4	Vitamin B9 (folic acid), mg/kg, no more	0.6-1.9	0.578	0.678	0.623	0.728
5	Vitamin B12 (cyanocobalamin), mg/kg, no more	0.002-0.006	0.089	0.00 2	0.00 2	0.003

The organoleptic properties of the resulting flour mixtures (samples No. 1 – 3) turned out to be the same and corresponded to GOST 26574-85.

The physicochemical parameters of the resulting flour mixtures also met established standards. Neutron activation analysis did not reveal the presence of heavy metals in the composition of flour mixtures.

CONCLUSION.

The research results allow us to conclude that the proposed method for the production of flour mixtures and products of improved nutritional value allows us to obtain products of increased nutritional value by enriching them with protein and mineral substances, dietary fiber, B vitamins, and improve the quality of products in terms of organoleptic and physicochemical indicators, increase the shelf life of fresh products and expand the range.

The use of various types of grains and other crops can significantly increase the nutritional value of the final product by achieving the maximum concentration of nutrients.

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Kompyuterning rivojlanish tarixi

Kompyuterlar inson tomonidan hisoblash jarayonlarini avtomatlashtirish uchun yaratilgan. Bugungi kunda ular nafaqat hisoblash, balki turli murakkab vazifalarni bajarishda yordam bermoqda. Ushbu maqolada kompyuterlarning ilk mexanik mashinalardan tortib zamonaviy sun’iy intellekt tizimlarigacha bo‘lgan rivojlanish tarixi batafsil yoritiladi.

1. Antik davr va ilk hisoblash uskunalari

Insonlar ilk bor hisoblashga bo‘lgan ehtiyojni qondirish uchun oddiy vositalardan foydalanganlar. Miloddan avvalgi davrlarda misrliklar va bobilliklar hisoblashda oddiy matematik usullarni qo‘llagan. Qadimgi Yunonistonda ham hisoblash uchun abakusdan foydalanilgan. Abakus oddiy taxtacha va ustunlar bo‘lib, ularning ustiga toshlar qo‘yilib, hisoblash amalga oshirilgan. Ushbu uskunalar kompyuterlarning ilk dastlabki shakllari sifatida qaraladi.

2. Mexanik hisoblash mashinalari (XVII asr – XVIII asr)

XVII asrga kelib, matematik hisoblash jarayonlarini tezlashtirish uchun mexanik qurilmalar ishlab chiqildi. Bu davrda mashhur matematiklar va ixtirochilar mexanik hisoblash qurilmalarini yaratishni boshladilar. Ulardan biri, 1642-yilda Blez Paskal tomonidan ishlab chiqilgan "Paskal kalkulyatori" edi. Ushbu kalkulyator arifmetik

amallarni bajarishga mo‘ljallangan bo‘lib, u murakkab mexanik uzellar yordamida ishlagan.

Keyinchalik, 1673-yilda nemis olimi Gotfrid Leybnits "Leybnits kalkulyatori"ni yaratdi. Bu kalkulyator ham arifmetik amallarni bajarishga mo‘ljallangan edi va hisoblash texnologiyasining yangi bosqichiga asos soldi. Bu davrda kompyuterlar faqat matematik hisoblashlarda qo‘llanilgan va ularning imkoniyatlari cheklangan edi.

3. Babbijning analitik mashinasi va Ada Lovleysning hissasi (XIX asr)

1837-yilda ingliz matematigi Charlz Babbij "Analitik mashina" deb atalgan loyiha ustida ishlay boshladi. Ushbu mashina birinchi dasturlashtiriladigan kompyuter hisoblanadi. Analitik mashina hisoblashni amalga oshirish uchun kartochkalardan foydalanishi rejalashtirilgan edi va u to‘liq avtomatlashtirilgan qurilma bo‘lishi kerak edi. Ammo, texnologiya yetarli darajada rivojlanmaganligi sababli, Babbij o‘z loyihasini amalga oshira olmadi.

Analitik mashina ustida ishlashda Ada Lovleysning ham katta hissasi bor. U Babbij mashinasiga dastur yozish g‘oyasini ishlab chiqdi va bu uni tarixda birinchi dasturchi sifatida tanitdi. Lovleysning ishlari kompyuterlarni dasturlash imkoniyatlari haqidagi dastlabki tushunchalarning rivojlanishiga yordam berdi.

4. Elektron hisoblash mashinalarining paydo bo‘lishi (XX asrning birinchi yarmi)

XX asrning birinchi yarmida elektronika rivojlanishi kompyuterlarning rivojlanishiga turtki bo‘ldi. Elektron hisoblash mashinalari (EHM)ning paydo bo‘lishi bilan birinchi haqiqiy kompyuterlar yaratildi. Birinchi EHMlardan biri — "ENIAC" (Electronic Numerical Integrator and Computer) bo‘lib, u 1946-yilda AQShda yaratilgan. Bu mashina katta hajmga ega bo‘lgan va vakuum lampalaridan foydalangan.

ENIACdan keyin yana bir qator kompyuterlar, jumladan, "UNIVAC I" (Universal Automatic Computer I) yaratildi. UNIVAC I tijorat maqsadida foydalanilgan birinchi kompyuter bo‘lib, u katta kompaniyalar va davlat muassasalari tomonidan ma’lumotlarni qayta ishlash uchun qo‘llanilgan.

5. Transistorlarning paydo bo‘lishi va ikkinchi avlod kompyuterlari (1950-yillar)

1950-yillarda transistorlarning ixtiro qilinishi bilan kompyuterlar yanada ixcham va samarali bo‘la boshladi. Transistorlar vakuum lampalarini almashtirib, elektr energiyasidan samarali foydalanishga imkon yaratdi. Shuningdek, kompyuterlarning ishonchliligi ham oshdi. Bu davrda kompyuterlar ikkinchi avlodga o‘tdi va ko‘plab ilmiy va texnik ishlarni bajarishda qo‘llanildi.

6. Integral sxemalar va uchinchi avlod kompyuterlari (1960-yillar)

1960-yillarda integral sxemalar (mikrosxemalar) ixtiro qilindi va bu kompyuter texnologiyasini yangi bosqichga olib chiqdi. Integral sxemalar bir nechta tranzistorlarni bitta kichik chipda birlashtirgan va bu orqali kompyuterlarning hajmini yanada kichraytirgan. IBM kompaniyasi 1964-yilda birinchi tijorat maqsadida ishlab chiqilgan tizim – IBM System/360 ni taqdim etdi. Bu davrda ko‘p tarmoqli kompyuter tizimlari paydo bo‘ldi va dasturiy ta’minotlar ham rivojlana boshladi.

7. Shaxsiy kompyuterlarning ommaviylashuvi (1970-1980-yillar)

1970-yillarning oxiriga kelib, mikroprotsessorlarning kashf qilinishi kompyuterlarni arzonlashtirdi va odamlar uchun uy sharoitida foydalanishga mo‘ljallangan shaxsiy kompyuterlar paydo bo‘ldi. 1976-yilda Apple kompaniyasi o‘zining birinchi kompyuterini – "Apple I" ni taqdim etdi. Keyin esa IBM o‘zining shaxsiy kompyuteri (PC)ni 1981-yilda chiqardi. IBM PC kompyuteri o‘sha davrning eng ommabop kompyuterlari qatoriga kirdi va butun dunyo bo‘ylab keng tarqaldi.

8. Internetning rivojlanishi va to‘rtinchi avlod kompyuterlari (1990-yillar)

1990-yillarda Internet rivojlana boshladi. Kompyuterlar orasida ma’lumot almashish imkoniyati paydo bo‘lib, bu global tarmoq orqali amalga oshirildi. Internetning ommalashuvi bilan kompyuterlar ofislarda, uy sharoitida va ta’lim sohasida keng qo‘llanila boshladi. Shu davrda Microsoft Windows, Apple Macintosh, va boshqa operatsion tizimlar rivojlanib, kompyuterlar yanada qulay va intuitiv bo‘ldi.

9. Zamonaviy kompyuterlar va sun’iy intellekt (XXI asr)

XXI asrda kompyuter texnologiyalari yangi cho‘qqilarga chiqdi. Sun’iy intellekt, mashina o‘qitish, va katta ma’lumotlar (Big Data) texnologiyalari kompyuterlarni yanada kuchli va murakkab jarayonlarga moslashtirdi. Hozirda kompyuterlar nafaqat uy va ofis muhitida, balki tibbiyot, transport, moliya, sanoat, va boshqa ko‘plab sohalarda faol qo‘llanilmoqda.

Bugungi kunda kompyuter texnologiyalarining rivojlanishi davom etmoqda va bulutli hisoblash, sun’iy intellekt, va kvant kompyuterlari kabi yangi yo‘nalishlar butun dunyoda texnologik yutuqlarni yana bir bosqichga olib chiqmoqda.

Xulosa

Kompyuterlarning rivojlanishi ilmiy-texnologik inqilobning muhim qismidir. Insoniyat oddiy mexanik hisoblash vositalaridan tortib, sun’iy intellekt tizimlarigacha bo‘lgan uzun yo‘lni bosib o‘tdi. Kompyuterlar bugungi kunda insoniyat uchun nafaqat hisoblash qurilmasi, balki kundalik hayotning ajralmas qismiga aylangan. Texnologiyaning rivojlanishi bilan kelajakda kompyuterlarning yangi imkoniyatlarga ega bo‘lishi kutilmoqda va ular inson hayotini yanada qulayroq va samaraliroq qiladi.

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ЗАДАЧИ РАЦИОНАЛЬНОГО ИСПОЛЬЗОВАНИЯ ВОДНЫХ РЕСУРСОВ ЦЕНТРАЛЬНОЙ АЗИИ В ПЕРИОД ИЗМЕНЕНИЯ КЛИМАТА

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АННОТАЦИЯ

Отмечена роль воды в развитии отраслей экономики. Интегрированное использование водных ресурсов рекомендовано как разумный метод водопользования. Рекомендован бассейно-формационный ряд водораздельных систем в устройстве земельной поверхности (ЗП). Предложено ряд рекомендаций по адаптации к изменению климата.

Ключевые слова: *Поверхностные и подземные воды, бассейн, земная поверхность, интегрированное управление, устойчивое развитие.*

CHALLENGES OF RATIONAL USE OF WATER RESOURCES IN CENTRAL ASIA DURING CLIMATE CHANGE

ABSTRACT

The role of water in the development of economic sectors is noted. Integrated water resource management is recommended as a wise method of water management. A basin-formational series of watershed systems in the structure of the land surface (SL) is recommended. A number of recommendations for adaptation to climate change have been proposed.

Key words*: Surface and groundwater, basin, earth's surface, integrated management, sustainable development.*

ВВЕДЕНИЕ. Глобальные процессы изменения климата отрицательно сказываются на речных бассейнах, которые обеспечивают водными ресурсами в целом и в том числе его подземную составляющую, расположенные по течению.

Повсеместно из-за процессов потепления наблюдается интенсивное снижение площади ледников являющиеся источником питания рек в летний период. Аридный климат Центральной Азии, расположенный вдали от влажных

океанических атмосферных потоков, обусловил наибольшую уязвимость региона от воздействия глобальных климатических изменений.

Две основные речные системы Центральной Азии - реки Сырдарья и Амударья, составлявшие акваторию Аральского моря, в большой степени зависят от сезонного таяния снега и ледников. Так как, зоны формирования водных ресурсов в основном находятся за пределами Республики Узбекистан, также если учесть зарегулированность поверхностных вод в верховьях, не трудно понять роль подземных вод в развитии отраслей экономики Республики Узбекистан.

АКТУАЛЬНОСТЬ. Использование подземных вод для ирригации быстро становится все более популярным, в настоящее время почти на 40% орошаемых земель подземные воды используются либо в качестве основного источника воды, либо в сочетании с поверхностными водами. Грунтовые воды стали бесценным источником воды для орошения, однако задача регулирования их использования оказалась практически невыполнимой. 72 процента пресной воды в мире используется в сельском хозяйстве, 16 процентов – в индустриальном производстве, 12 процентов – в сфере бытовых услуг. Больше подземных вод используется в засушливых и полузасушливых регионах (ФАО, 2021). Рост использования подземных вод выступает одним из признаков нарастающего дефицита поверхностных вод [7, с. 27-28]. Необходимость экосистемной переоценке ресурсов подземных вод аридных территорий заключается в том, что реально существующее водопотребление зачастую значительно превышает экологически допустимое изъятие водных ресурсов из недр, что ведет к критическому снижению уровней подземных вод (напорных и грунтовых) провоцирующее почвенную засуху, что прогрессирует опустынивание территорий.

ЦЕЛЬ И ЗАДАЧИ. Учитывая выше сказанное, исследования должны охватить вопросы, касающиеся интегрированного, являющегося самым разумным и справедливым, управлением водных ресурсов.

Бассейновая организация земной поверхности (ЗП) является наиболее эффективным средством (ресурсом и инструментом) природопользования и тем более водопользования. Доводами недостаточного использования ее в оценке рационального природопользования и водопользования является несоответствие схемам административного деления и экономически необоснованность с существующими подходами. Однако основной (по существу) причиной является теоретическая неразработанность бассейновой композиции и ее значения для функционирования ЗП и геосфер.

В рамках предлагаемого подхода существует возможность обоснования переходной природы ЗП и сферы ее функционирования, как явления, объекта и механизма, в масштабах реального производства.

Управляюще-структурирующий приоритет террально-водораздельных систем в устройстве ЗП задает смысл объектомерному (бассейно-формационному) ряду: континент (крупный регион)- субконтинент (страна)-полуостров (область)-остров (водохозяйственный район)-перешеек (административный район)- мыс (агроучасток).

Каждый объект соотнесен с конкретной рекой-идентификатором определенной длины и порядка, начиная с континетального (более 3 тыс. км). Особое внимание уделено литотранзитным (регуляторным) объектам (лагунам, устьям и проливам).

Таким образом концепция региональной экологии (КРЭ) опирается, во-первых, на представление о трехзвенной системной целостности природной основы управления водно-земельными ресурсами (УВЗР): общего строя ЗП, контактно-стержневого (водного) гидро-геоморфологического комплекса (ГГК) и объектно-конкретной концепции бассейновой композиции (КБК) и, во-вторых, на управленческий (мониторинг, норма-регламент, диагноз и прогноз) приоритет агро-промышленного звена в природно-хозяйственных системах [2, с.14]

В развитых государствах (Австралия, Россия, Франция, Испания, Англия, Казахстан, Украина) осуществляется принцип бассейнового интегрированного управления водных ресурсов, в отдельных странах по отраслям (США, Италия), в Нидерландах и частично в Индии на уровне районов.

ОБЗОР ЛИТЕРАТУРЫ И ОБСУЖДЕНИЕ. Вопросам интегрированного управления водных ресурсов посвятили свои труды зарубежные ученые, как О.Л. Юшманов, В.В. Шабанов, И.Г. Галямина, И.И. Бородавченко, И.Н. Лозановская, Д.С. Орлов, А.Б. Авакян, В.М. Широков, Г.В. Воропаев, И.А. Шикломанов, Б.Б. Шумаков, В.И. Данилов-Данильян, R. Clarke, J. King, S.P. Bindra, A. Hamid, H. Salem, K. Hamuda, S. Abulifa, J. Friesen, L.R. Sinobas, L. Foglia, R. Ludwig, H.H. Savenije, P. Van der Zaag, X.J. Hu**,** Y.C. Xiong, Y.J. Li, J.X. Wang, D. Kraff, A.D. Steinman, C. Furlong, K. Gan, S. De Silva, P. Gourbesville, B. Mapani, L. Magole, H. Makurira, M. Meck, T. Mkandawire, M. Mul, C. Ngongondo, A. El-Sadek, M.E. Kahloun, P. Meire, Sh. Yano, которые достигли определенных успехов. В Узбекистане исследования в этом направлении проводили А.З. Захидов, С.Ш. Мирзаев, И.Х. Валиев, Н.Р. Хамраев, В.А. Духовный, В.Е. Чуб, В.И. Соколов, Р.К. Икрамов, М.А. Якубов, А.Т. Салохитдинов, Ш.О. Мурадов, Н.Н. Мирзаев, Н. Раҳимов и многие другие [9, с.47].

Узбекистан очень уязвим к изменению климата, последствия которого серьёзно отражаются на водных ресурсах, что существенно влияет на здоровый образ жизни населения и устойчивое развитие страны. Республика стремится развиваться в климатически-устойчивом русле, и на это направлена его национальная и международная политика.

Как отмечено в документах ООН, сотрудничество по трансграничным водам дает множество преимуществ и является важным фактором достижения многих Целей устойчивого развития [11, с.18].

Сотрудничество между соседними Государствами должно способствовать климатически-устойчивому управлению водными ресурсами на бассейновом уровне и улучшенному информированию о текущих процессах, с целью совершенствования управления и развития водного сектора, для более эффективной подготовки к управлению рисками, связанными с неблагоприятными воздействиями изменения климата на обеспеченность водными ресурсами.

Надо обратить внимание на недостаточную согласованность и отсутствие платформ для обмена информациями между учеными, что является препятствием на пути решения проблем изменения климата и окружающей среды. В настоящее время мониторинг водных ресурсов и наблюдения за климатом осуществляется несколькими организациями, что требует разработки четких механизмов и протоколов для координации и обмена данными и их цифровизации на уровне речных бассейнов. Усиливать взаимовыгодное сотрудничество и партнерство в области управления трансграничными бассейнами, в т.ч. подземными водосборными бассейнами, в частности путем налаживания обмена информацией, опытом и передовыми методами.

Мы убеждены, что исследования в области климатически-устойчивого интегрированного управления водными ресурсами на бассейновом уровне и на уровне водопользователей (административных районов, кластеров, промышленных предприятий и т.д.) сегодня весьма недостаточны и участие молодого поколения специалистов в решении проблем, будет иметь решающее значение. Реализовывать планы интегрированного управления для рационального, равноправного и устойчивого использования водных ресурсов, обеспечивая сбалансированность между социально-экономическим развитием, сохранением качества ресурса, охраной и сбережением экосистем является неотложным решением.

И как отмечено в Резюме Всемирного доклада ООН о состоянии водных ресурсов 2024 года: Становление и сохранение безопасности и равноправия в области водных ресурсов будут лежать в основе всеобщего благополучия и мира. Эта взаимосвязь может работать и в обратном направлении: бедность и неравенство, социальная напряженность и конфликты способны еще больше усугублять отсутствие такой безопасности [12, с.2].

ЗАКЛЮЧЕНИЕ. В связи с этим, считаем целесообразным обратить внимание и рассмотреть в будущих программах экосистемные исследования для выполнения следующих вопросов:

-разработка эколого-водохозяйственного районирования ЦА[9, с.90-105];

- выявление естественных подземных регулирующих емкостей, таких как, конуса выносов, погребенные речные долины и русла рек;

- возрождение, таких энергосберегающих водосборных систем, как «кяриз» - для предгорий и «сардоба» - для равнинных зон; - также, изучать возможности альтернативных методов питьевого водоснабжения, отдельных удаленных потребителей;

- крайне необходимо экспериментально изучить удельное водопотребление всех участников водохозяйственного комплекса (коммунально-бытовое и сельское хозяйство, промышленность, энергетика, рекреация и др.);

-разработать расчетные схемы интегрированного использования водных ресурсов на уровне отраслей экономики, административных районов и областей, бассейнов рек в соответствии Указа Президента Узбекистана от 10.07.2020 ПУ-6024;

-внедрить технологию использования грунтовых вод для субирригации в целях улучшения гидрогеолого-мелиоративных и экологических условий зоны аэрации, сокращение оросительной нормы и предотвращение просадочных явлений [1];

- в целях предотвращения почвенной засухи, осуществить изоляцию гидрогеологических окон для предотвращения инфильтрации грунтовых вод в нижележащие подземные воды и сохранения интервала критической глубины [3,4,5,6];

-изучить метаморфизацию химического состава грунтовых и поверхностных вод в целях прогнозирования солесодержания в почво-грунтах и типа засоления орошаемых земель;

-как дополнительный ресурс в целях снятия водного стресса, необходимо задействовать соленые подземные и поверхностные воды для промышленности и для технических нужд в коммунально-бытовом хозяйстве, в перспективе для орошения земель путем внедрения отечественных технологий деминерализации

вод [10] в соответствии требований Указа Президента Узбекистана от 04.05.2017 г. УП-2954.

-для предотвращения влияния Куштепинского канала, необходимо в месте слияния рек Вахш и Пяндж построить гидроузел и провести самотечный канал протяженностью более 500 км до Дехканабадского района Кашкадарьинской области и путем подъема в реку Кичик Урадарья подать воду в Пачкамарское водохранилище и далее через реку Гузардарья, Карадарья и Кашкадарья довести до реки Зарафшан. Этим будет осуществлена экономически и экологически выгодная водообеспеченность Сурхандарьинской, Кашкадарьинской, Навойинской и Бухарской областей;

-для повышения эффективности использования воды при поливе многолетних и однолетних культур, особенно при капельном орошении и субирригации, улучшения плодородия почв и продуктивности пастбищ, повсеместно необходимо использовать природные минералы (вермикулит, монтморриллонит, перлит и др.) способствующие уменьшению физического испарения и увеличение продуктивного испарения – транспирации [8] в замены гидрогелям, имеющим отрицательное экологическое воздействие. Бытует мнение, что при разложении гидрогеля образуется опасное вещество- акриламид (концероген). Гелевый субстрат не обеспечивает растения полезными компонентами, не рекомендуется использовать гидрогель при выращивании суккулентов, эпифитов, кактусов и других засухоустойчивых растений.

Резюмируя можно привести пророческие слова из Всемирного доклада ООН о состоянии водных ресурсов 2024 года, опубликованном ЮНЕСКО от имени механизма «ООН — водные ресурсы», где подчеркивается, что напряженность в отношении водных ресурсов приводит к обострению конфликтов во всем мире. Чтобы сохранить мир, государства должны укреплять международное сотрудничество и трансграничные соглашения в этой сфере [11.с.1].

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DIABETIC NEPHROPATHY IN CHILDREN AND ADOLESCENTS: FEATURES OF DIAGNOSIS AND TREATMENT

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Annotatsion. *The history of the discovery of pathological changes in the kidneys in diabetes mellitus (DM) goes back more than a century. In 1840, in the Paris hospital, C. Bernard, conducting a pathomorphological study of a patient with newly diagnosed DM, recorded a sharp increase in the size of the kidneys [1]. Later works showed an increase in kidney size in experimental diabetes [2]. Thus, it was suggested that nephromegaly is due to a state of hyperglycemia [3]. Since the discovery of insulin by Banting and Best in 1921, "late" diabetic complications began to determine the prognosis of the disease. Currently, diabetic nephropathy (DN) is the most formidable complication of DM, occupies a leading position in the structure of the contingent of adult patients requiring hemo- and peritoneal dialysis [4]. For a long time, nephropathy was diagnosed at the stage when the symptom complex of nephrotic syndrome developed and chronic renal failure (CRF) was formed. Since the 80s of the last century, the possibilities of diagnostics and treatment of preclinical stages of DN in children and adolescents have appeared [5]. Currently, it is known that DN in "juvenile diabetes" is the main cause of disability and mortality of patients. Research results show that the older the age at which diabetes was diagnosed, the lower the cumulative incidence of terminal stage CRF [6, 7].*

Keywords: *Diabetes mellitus, microalbuminuria, blood pressure.*

Introduction. According to the European Diabetes Association, in the population of children and adolescents with type 1 diabetes (DM1), the incidence of DN on the old continent is from 3.5 to 20% [8]. The fact of underdiagnosis of DN in pediatric practice due to the absence of clinical symptoms of the disease and the increase in the incidence of diabetes is alarming [4]. In childhood and adolescence, preclinical stages of DN are predominantly encountered, and therefore the main criteria for verifying this complication are laboratory parameters. However, in order to exclude/confirm DN, it is necessary to conduct a clinical and anamnestic examination of the patient, which

allows drawing the attention of the pediatric nephrologist to signs that directly or indirectly indicate the possibility of developing diabetic kidney disease. According to the hypothesis of B. Brenner et al., low body weight (BW) at birth can serve as a predictor of kidney disease both in patients with diabetes and in the general population. According to the authors, small kidney size can be accompanied by a decrease in the number of renal glomeruli and an increase in the pressure gradient in the kidneys [8]. This concept is not supported by the data obtained in the study of the relationship between weight, kidney size and the number of glomeruli. Also, population studies did not reveal a correlation between microalbuminuria (MAU), blood pressure (BP) and BW at birth [9]. Thus, it seems doubtful that pathologically low BW at birth can determine the development of nephropathy. The influence of this factor is possiblyis insignificant and does not play a role in the treatment of patients. Studies have proven a stable relationship between the duration of diabetes and the development of DN. The risk of developing and progressing DN depends on the age of the onset of diabetes. DN develops much more often and faster in patients with the onset of diabetes in puberty, reaching 44-45%, decreases with the onset of diabetes after 20 years to 30-35% and does not exceed several percent at the onset of the disease in adults [10, 11]. Similar trends were identified by a scientific group studying mortality in an international epidemiological study of diabetes [6]. From the moment diabetes is detected in a child, the degree of compensation of metabolic disorders, mainly hyperglycemia, mainly determines the potential risk of developing DN. Patients more often have unsatisfactory compensation of carbohydrate metabolism according to the level of glycated hemoglobin (HbA1c). The presence of other diabetic complications (retinopathy, neuropathy, etc.) may indirectly indicate a potential risk of developing DN in children and adolescents with diabetes mellitus [10]. DN is a complication of diabetes mellitus (ICD 10: N 08.3) and has a certain stage of development. In 2000, the Ministry of Health of the Republic of Uzbekistan approved a new classification of DN, which includes three stages of development of this complication: 1 - stage of microalbuminuria; 2 - stage of proteinuria with preserved filtration function of the kidneys; 3 - stage of chronic renal failure [4]. The advantage of this classification is its adaptability to practical diabetology and nephrology. In international nephrological practice, the classification of S.E. Mogensen is more often used, the main advantage of which is its focus on identifying early stages of DN. Since its development by the author in 1983, and subsequent additions, the classification has been of great interest to researchers of DN [12]. Given the need for earlier diagnosis of DN, the question arises at what stage the doctor has the opportunity to verify DN and begin therapeutic measures to contain the progression of DN. According to the classification of CE Mogensen, the development of DN is characterized by the following stages. I. The

stage of acute renal hypertrophy and hyperfunction is characterized by an increase in the glomerular filtration rate (GFR) by 20-50%, an increase in the size of the kidneys, and glomerular hypertrophy. Normoalbuminuria is typical (excluding the possibility of morphological examination of patients with diabetes. III. The stage of incipient DN, according to this classification, develops after 5 years of diabetes. It is characterized by MAU (from 30 to 300 mg / day), a gradual decrease in SCF. Some patients have a moderate increase in blood pressure. It has been established that from the moment of MAU onset, the blood pressure level increases by approximately 3% per year. Adequate insulin therapy allows stabilizing MAU and SCF. The appointment of complex pathogenetic therapy also helps to reduce MAU and prevents a decrease in SCF. According to the recommendations of the American Diabetes Association and the European Group for the Study of Diabetes,The study of MAU is included in the list of mandatory methods of examination of patients with diabetes mellitus types 1 and 2. Screening for MAU should be carried out as follows: once a year after 5 years from the onset of diabetes (at the onset of the underlying disease before the onset or after the end of the pubertal period) or 1-2 times a year from the moment of diagnosis of diabetes (at the onset during the pubertal period). In patients with type 2 diabetes mellitus (DM2), MAU screening is recommended to be carried out once a year from the moment of diagnosis of diabetes [16]. The issue of early detection of DN, i.e., in the preclinical stages, is fundamentally important, since the possibility of slowing the development of DN and postponing the development of uremia has been proven. Currently, MAU is considered a laboratory criterion that allows with a high degree of reliability to identify the preclinical stage of DN. The diagnostic value is the value of albumin excretion in urine more than 30 mg / day. The development of effective and rapid express methods for determining albumin allows for mass screening of children and adolescents with diabetes. The introduction of the Mikal 1 and Mikal 2 tests into clinical practice has been successful; the Mikal 2 test has proven to be especially effective and easy to use in the clinic [12, 16]. IV. The stage of severe nephropathy is accompanied by macroalbuminuria (proteinuria), persistent increase in blood pressure, signs of incomplete or complete nephrotic syndrome, and a decrease in SCF [17]. Clinical nephropathy develops after 10–15 years of diabetes and is quite rare in adolescents. Arterial hypertension, which occurs secondarily as a result of diabetic kidney damage, usually in adult patients, with an average increase in blood pressure of 5 mm/year, becomes the most powerful factor in the progression of renal pathology, the strength of its damaging effect being many times greater than the influence of the metabolic factor (hyperglycemia and dyslipidemia). Progression of the stage slows down with compensation of metabolic disorders, pathogenetic therapy [2, 10]. V. Stage of uremia. Formation of terminal CRF in children and adolescents is practically impossible, since

its development occurs after 15-20 years of diabetes. If symptoms characteristic of the uremia stage (decrease in SCF to less than 10 ml/min, arterial hypertension, intoxication) are detected in a child with type 1 diabetes, other causes of CRF development in the child should be considered. To some extent, it can be considered optimistic that DN, unlike diabetic retinopathy, does not develop in all patients with diabetes. DN occurs in 35% of patients suffering from diabetes. The risk of developing DN is highest in patients with diabetes history of up to 15 years, then it tends to decrease [12, 18]. Currently, it is known that children and adolescents can develop type 2 diabetes [19]. Research data confirm that kidney damage in type 1 and type 2 diabetes mellitus are very similar. There are undoubtedly some peculiarities, primarily related to the underlying disease. Patients with type 2 diabetes mellitus are older and have a higher body weight. With type 2 diabetes mellitus, arterial hypertension with subsequent kidney damage occurs earlier.In advanced DN in type 1 diabetes, there is a clear correlation between blood pressure and a decrease in SCF. In type 1 diabetes, a correlation was also found between a decrease in SCF and glycemic control, but this situation is less clear in type 2 diabetes, since no correlation was found between a decrease in SCF and HbA1c [10, 20]. The stages of DN according to the CE Mogensen classification are certainly a guideline in the diagnosis of DN and the basis for further research. According to the classification, the MAU stage develops after 5 years of diabetes. However, in recent years, this opinion has been refuted. According to the EURODIAB study, which studied the incidence of DN in 26 different centers in Europe, a change in the duration of DN stages in modern conditions was shown. MAU was detected in 18% of patients with type 1 diabetes and a disease duration of less than 5 years [21]. As can be seen from the data presented above, the main attention in DN in children and adolescents is paid to an early laboratory sign, such as MAU, and therefore there is special interest in studying the state of the glomerular apparatus [22]. The presence of morphological changes in all parts of the nephron in the early stages of the disease determines the need to study the functions of the renal tubular apparatus not only in long-term disease, but also in the manifestation of type 1 diabetes in children and adolescents [18]. Diagnostic assessment of other renal function disorders, which are usually analyzed by nephrologists in nephropathy (reduced ability of the kidney to osmotic concentration and dilution of urine), recede into the background in the practice of a diabetologist clinician. There are several reasons, but one of them is that in DN, neither the Zimnitsky nor the Volhard test can be used. The presence of glucose in the urine makes it impossible to characterize the function by urine concentration due to the error in determining the relative density compared to samples that contain only electrolytes and urea [23]. According to published data, the issue of the kidney’s response to antidiuretic hormone in diabetes mellitus is relevant [24, 25].

The study results revealed a tendency towards a decrease in the osmolality of night urine samples in adolescents with the longest duration of diabetes mellitus. In patients with incipient DN, the reabsorption of osmotically free water was lower than in patients at the onset of the disease and in adolescents with a history of diabetes mellitus without DN [26]. The studies have shown that an increase in the excretion of the lysosomal enzyme N-acetyl-β-D-glucominidase in urine is an early marker of renal tubular dysfunction in diabetes mellitus. In a number of studies, tubular damage often depends not so much on the quality of metabolic control as on the presence of ketosis [27]. Standard assessment of tubular disorders by the amount of β2-microglobulin in urine has shown conflicting results in various studies [18, 28]. To verify DN, differential diagnostics with "non-diabetic" kidney pathology is necessary. Some alternative disease of the urinary system can be suspected in cases where the course of the pathology differs from the typical manifestations of DN [29]:• manifestations of renal disease appeared before the development of diabetes; • detection of MAU at the age of up to 10 years; • early and/or rapid increase in non-selective proteinuria; development of nephrotic syndrome; rapid decrease in SCF; • changes in urinary sediment that are not characteristic of DN (hematuria, leukocyturia, cylindruria, etc.); • differential diagnosis should be considered in case of development of renal pathology against the background of constantly optimal compensation of diabetes (the level of HbA1c at times in very high concentrations glucose inhibits their growth. According to research, strains of Escherichia coli expressing fimbriae of the 1st type have higher adhesion to the uroepithelium in diabetes [29]. A significant reason for the high frequency of urinary tract infection is neuropathy of the bladder (a manifestation of diabetic autonomous polyneuropathy, clinically characterized by a decrease in urination, the disappearance of nocturia in a patient with diabetes). A feature of UTI in diabetes is an atypical (up to 90% of cases) asymptomatic or low-symptom course. Pathology can be suspected on the basis of unexplained decompensation of carbohydrate metabolism and the appearance of ketonuria in patients with diabetes mellitus 1. The principles of complex therapy of diabetic kidney damage consist of several boards. I. Compensation of carbohydrate metabolism. One of the criteria for optimal compensation is the HbA1c level of 7.6%, which helps prevent the development and significantly reduce the rate of progression of DN. Adequate insulin therapy for a child with diabetes mellitus should be prescribed by an endocrinologist-diabetologist. In Uzbekistan, only human genetically engineered insulins and insulin analogues are recommended for children and adolescents. The most widely used regimen at present is the intensified (or basal-bolus) regimen [10, 18]. Treatment with an insulin pump (CSII - continuous subcutaneous insulin infusion) is a more expensive method than traditional treatment with syringes or syringe pens. The use of a pump does not replace intensive insulin

therapy, but helps to improve it in order to bring carbohydrate metabolism control to target levels. It should be noted that self-monitoring, education of the child and parents in the Diabetes School are of great importance in maintaining satisfactory compensation of diabetes. II. Correction of intraglomerular hypertension is the most important component of the pathogenetic treatment of DN. For this purpose, angiotensin-converting enzyme inhibitors (ACEIs) are prescribed. According to the literature, timely and correct prescription of ACEIs can significantly reduce the rate of DN progression. It should be noted that ACEIs are recommended for continuous use at the proteinuria stage [4, 22]. Drugs of this group have become widely used in non-diabetic nephropathies [30]. In recent years, other groups of antihypertensive drugs have been increasingly mentioned in the literature, including angiotensin II receptor antagonists type 1, as means of correcting intraglomerular and systemic hypertension in DN.However, the use of these drugs in children is currently limited [31]. III. Clinical studies have demonstrated the advisability of using glycosaminoglycan preparations in the treatment of incipient DN; they have the ability to prevent mesangial proliferation and hyperproduction of the extracellular matrix, as well as thickening of the glomerular basement membrane and impairment of its permeability and charge selectivity [32]. IV. The issue of limiting animal protein in the treatment of DN in adolescents is currently under discussion. The purpose of such restrictions is to reduce the hemodynamic load on the kidneys caused by a high-protein diet and to reduce the filtration load of protein on the kidneys. Some authors believe that it is inappropriate to limit protein in children and adolescents as the main building material of a growing organism. The ISPAD Consensus recommendations (2000) propose using a diet with moderate protein restriction (up to 0.9–1.2 g/kg/day) in adolescents at the MAU stage, and at the proteinuria stage, protein restriction to 0.8–0.9 g/kg/day is necessary [33]. V. Hypolipidemic therapy (bile acid sequestrants, nicotinic acid and its derivatives, fibrates, HMG-CoA reductase inhibitors) is an important component of pathogenetic treatment in adult patients with DN at the stage of severe nephropathy combined with dyslipidemia. In pediatric practice, the use of the above drugs is not recommended due to the possibility of developing side effects [10]. In children and adolescents with DN, in case of detection of lipid disorders, the use of bile acid sequestrants (cholestyramine, cholestynol) is permissible. VI. The issue of correction of elevated homocysteine levels in children and adolescents using folic acid and B vitamins is considered as one of the promising areas of pathogenetic therapy for DN [34, 35]. VII. Treatment of concomitant pathology of the urinary system should be singled out as a separate component of therapy aimed at preventing glomerulosclerosis in diabetes mellitus. In conclusion, it should be additionally noted that timely diagnosis and treatment of DN in children and adolescents largely determine the quality of life and prognosis of a

patient with diabetes mellitus. Suppression of the rate of progression of diabetic kidney disease is most promising in the early stages. Subsequently, timely treatment and diagnostic measures can reduce the number of patients requiring replacement dialysis therapy and reduce the risk of cardiovascular pathology associated with chronic renal failure [4].Currently, the issue of limiting animal protein in the treatment of DN in adolescents is being discussed. The purpose of such restrictions is to reduce the hemodynamic load on the kidneys caused by a high-protein diet and to reduce the filtration load of protein on the kidneys. Some authors believe that it is inappropriate to limit protein in children and adolescents as the main building material of a growing organism. The ISPAD Consensus recommendations (2000) propose using a diet with moderate protein restriction (up to 0.9–1.2 g/kg/day) for adolescents at the MAU stage, and at the proteinuria stage, protein restriction to 0.8–0.9 g/kg/day is necessary [33]. V. Hypolipidemic therapy (bile acid sequestrants, nicotinic acid and its derivatives, fibrates, HMG-CoA reductase inhibitors) is an important component of pathogenetic treatment in adult patients with DN in the stage of severe nephropathy combined with dyslipidemia. In pediatric practice, the use of the above drugs is not recommended due to the possibility of developing side effects [10]. In children and adolescents with DN, in case of lipid disorders, the use of bile acid sequestrants (cholestyramine, cholestynol) is acceptable. VI. The issue of correcting elevated homocysteine levels in children and adolescents using folic acid and B vitamins is considered as one of the promising areas of pathogenetic therapy for DN [34, 35]. VII. Treatment of concomitant pathology of the urinary system should be singled out as a separate component of therapy aimed at preventing glomerulosclerosis in diabetes mellitus. In conclusion, it should be additionally noted that timely diagnosis and treatment of DN in children and adolescents largely determine the quality of life and prognosis of a patient with diabetes. Containing the rate of progression of diabetic kidney damage is most promising in the early stages. Subsequently, timely treatment and diagnostic measures can reduce the number of patients requiring replacement dialysis therapy, reduce the risk of cardiovascular pathology associated with CRF [4].Currently, the issue of limiting animal protein in the treatment of DN in adolescents is being discussed. The purpose of such restrictions is to reduce the hemodynamic load on the kidneys caused by a high-protein diet and to reduce the filtration load of protein on the kidneys. Some authors believe that it is inappropriate to limit protein in children and adolescents as the main building material of a growing organism. The ISPAD Consensus recommendations (2000) propose using a diet with moderate protein restriction (up to 0.9–1.2 g/kg/day) for adolescents at the MAU stage, and at the proteinuria stage, protein restriction to 0.8–0.9 g/kg/day is necessary [33]. V. Hypolipidemic therapy (bile acid sequestrants, nicotinic acid and its derivatives, fibrates, HMG-CoA reductase

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FEATURES OF CLINICAL MANIFESTATION AND WAYS TO SOLVE THE PROBLEM OF DIABETIC NEPHROPATHY IN CHILDREN

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Relevance. *Diabetic nephropathy (DN) and its progression to chronic renal failure (CRF) have become an important issue of national health in Europe, the USA and Japan. In terms of the need for hemodialysis treatment or kidney transplantation, DM ranks first in the USA and shares 2nd and 3rd place in European countries. In the USA, the main contribution to the annual increase in the number of patients with CRF (8%) is made by patients with DM, estimated at 34% of all cases [14].*

Until recently, most cases of CRF were identified with insulin-dependent diabetes mellitus (IDDM). The prevalence of DN and CRF in non-insulin-dependent diabetes mellitus (NIDDM) has not been sufficiently studied, since it is difficult to accurately determine the time of disease onset, and increased albumin excretion can be observed even with a short duration of the disease. This situation is gradually beginning to change, since it is increasingly difficult to ignore the growing number of patients and the cost of all types of medical care aimed at combating this complication of diabetes. Terminal renal failure in type 2 diabetes develops much less frequently than in type 1 diabetes (5-10% and 30-50% of cases, respectively). However, these patients make up 90% of the entire diabetic population, and CRF that develops as a result of DN is the second most common cause of death (after cardiovascular complications). The US National Foundation has published data showing that patients with type 2 diabetes now account for the same number of new cases of chronic kidney disease as patients with type 1 diabetes [1].

Keywords: *diabetic nephropathy, glomerular filtration rate, renal threshold.*

Kidney damage in type 2 diabetes 1. Specific kidney damage (diabetic nephropathy proper):
diffuse glomerulosclerosis, nodular glomerulonephritis.
2. Non-specific kidney damage
• Infectious: bacteriuria, pyelonephritis, renal carbuncle, renal abscess, papillary necrosis.
• Vascular: atherosclerotic nephrosclerosis, hypertensive nephrosclerosis.

• Toxic: when administering contrast agents, abuse of non-narcotic analgesics.
• Neurogenic: atony of the bladder (hydronephrosis).
• Immunoinflammatory: glomerulonephritis, interstitial nephritis.
• Tumor: paraneoplastic nephropathy.
• Urolithiasis.

Kidney damage in type 2 diabetes mellitus is represented by a wide spectrum, in which diabetic glomerulosclerosis, pyelonephritis and urinary tract infection, atherosclerotic nephrosclerosis, hypertensive nephrosclerosis have the greatest clinical significance. These changes are primarily associated with the peculiarities of metabolic disorders in diabetes mellitus with characteristic micro-macroangiopathy, a tendency to infectious complications and an increased risk of cardiovascular pathology. The prevalence and severity of kidney damage are also affected by oncological diseases and iatrogenic factors. We should not forget about glomerulonephritis - one of the most common causes of chronic renal failure in our country. Peculiarities of kidney damage in type 2 diabetes may be due to age-related morphological changes, such as sclerosis of small renal arteries and arterioles (especially efferent) with hyperperfusion of the medulla and a decrease in the cortical fraction, fibrosis of the interstitium of the medulla, and focal glomerulosclerosis. These changes lead to a decrease in the activity of the renin-angiotensin-aldosterone system and a decrease in the synthesis of prostaglandins, which is manifested by a gradual (starting from the age of 40) decrease in acidogenesis, the concentrating ability of the kidneys, the reabsorption of water and sodium chloride, and a decrease in the renal effect of antidiuretic hormone. A decrease in the filtration function of the kidneys (slower than the concentrating ability) is associated with a decrease in cortical blood flow (by 10% every decade) and the progression of glomerulosclerosis so that by the age of 80 the total number of glomeruli decreases almost twofold. In addition to age-related renal hemodynamic disorders, favorable background conditions include decreased immune reactivity, impaired urodynamics (hypokinesia of the ureters, bladder, prostate adenoma), hypertension, hyperlipidemia with established "nephrotoxic" action of lipids [9, 16]. Even moderately expressed effects of dysmetabolism created by diabetes can decompensate the kidney in elderly people. In type 2 diabetes, the same dependence of the incidence of DN on the duration of the disease is observed as in type 1 diabetes; however, the course and clinical manifestations of DN differ. Hyperfiltration, which is characteristic of the early stages of DN in patients with type 1 diabetes, i.e. high glomerular filtration rate (more than 140 ml/min • 1.73 m2), is not detected in patients with type 2 diabetes, which is probably associated with the severity of sclerotic changes in the renal tissue already at the onset of the disease in the latter [7]. Hyperfiltration is detected in Pima Indians with diabetes (a kind of natural model of NIDDM) and microalbuminuria [10] (ethnic

differences in the population of patients with diabetes may play a role; the young age of the Indians allows them to avoid multimorbidity). Microalbuminuria in patients with type 1 diabetes is the most important harbinger of the clinical stage of DN, in patients with type 2 diabetes this indicator is more associated with the development of cardiovascular pathology [8].55-60% of patients with diabetes mellitus and microalbuminuria die from myocardial infarction or stroke, and only 3-5% from uremia. Microalbuminuria is not only and not so much a predictor of renal disease (as in type 1 diabetes mellitus), but a marker of atherosclerosis and premature death. The causes of increased cardiovascular mortality have not been fully clarified. This may be a consequence of more severe, generalized endothelial dysfunction predisposing to atherosclerosis, a sign of which is microalbuminuria [13]. The development of microalbuminuria in diabetes mellitus is associated with abnormalities in the hemostasis system, coagulation, and glucose and lipid metabolism. Recent studies have shown that microalbuminuria may be an independent manifestation of cardiometabolic syndrome X [5]. Thus, the definition of microalbuminuria for the diagnosis of DN in diabetes mellitus is not specific. In contrast, macroalbuminuria makes the diagnosis of DN more likely, especially in the presence of retinopathy [3]. A number of studies on the study of structural changes in the kidneys in diabetes mellitus with microalbuminuria revealed a heterogeneous picture [2, 4]. Only a third of patients had a typical picture of diabetic glomerulosclerosis, characteristic of DN in diabetes mellitus. Normal or close to normal kidney structure was also determined in a third of patients; a third of patients had "atypical" patterns of renal damage with the absence or minor glomerular changes against the background of disproportionate tubulointerstitial changes, arterial hyalinosis and global sclerosis. If in type 1 diabetes mellitus the diagnostic criteria and staging of DN are outlined, then in type 2 diabetes mellitus this is difficult. Each case of nephropathy is individual, especially for the elderly. There are very few studies in the literature devoted to the systematic determination of predictors of the development and progression of DN in patients with diabetes mellitus. The most probable are poor glycemic control, arterial hypertension, urinary tract infection, hyperlipidemia, and genetic factors [6, 11, 16]. Therapeutic approaches at different stages of DN in type 2 diabetes have their own characteristics. In the early subclinical stage of the disease, when it is possible to influence its morphological substrate, the primary role among therapeutic measures belongs to glycemic control and its stabilization at an optimal level [12, 15]. This approach is important, since it is of decisive importance for eliminating intrarenal hemodynamic disorders that initiate diabetic glomerulosclerosis. The pathological significance of hyperglycemia is also manifested in non-enzymatic glycation of proteins, the polyol pathway of glucose metabolism, impaired synthesis of glycosaminoglycans, and, finally, direct glucose

toxicity. Treatment of diabetes, especially in the elderly, often remains unsatisfactory. Poor glycemic control is typical for this age group. Doctors sometimes do not take into account the different needs of these patients, their attitude towards the disease,social conditions and individual difficulties in compliance with dietary recommendations, exercise and medication. Despite these limitations, there is sufficient evidence that good control is a reasonable goal with real short-term and long-term benefits. Given the role of chronic decompensation of diabetes in the development of vascular complications, strict criteria for diabetes compensation, all patients should be trained in the principles of diabetes therapy and self-monitoring of carbohydrate metabolism. At the initial stage of DN in diabetes, all hypoglycemic drugs of the sulfonylurea group, biguanides, and glucosidase blockers can be used, provided that satisfactory compensation of carbohydrate metabolism is maintained. At the stage of advanced DN, especially with declining renal function, when irreversible, advanced morphological changes occur, the requirements for achieving ideal compensation of carbohydrate metabolism are weakened. Moreover, the desire to maintain ideal compensation of diabetes in patients with severe DN is associated with the risk of hypoglycemia against the background of a decrease or complete disappearance of precursor symptoms. At the stage of CRF, transfer to insulin therapy is mandatory, since most oral hypoglycemic agents are metabolized and excreted by the kidneys. An exception is glurenorm (gliquidone, Boehringer Ingelheim, Austria), excreted through the biliary tract, which allows its use in patients at the initial stage of CRF. With the development of CRF, certain difficulties in controlling carbohydrate metabolism arise due to changes in the need for insulin. On the one hand, with nephrosclerosis, the need for exogenous insulin administration decreases due to a violation of its metabolism. This is also facilitated by intoxication, diabetic paresis of the gastrointestinal tract and subsequent impaired absorption of food. If this is not addressed, there is a risk of hypoglycemia, and due to autonomic neuropathy, patients lose the ability to feel its clinical manifestations. With CRF, tissue resistance to insulin increases, which is eliminated with the start of dialysis therapy. Dialysis stops dyspeptic symptoms, improves appetite, which increases the need for insulin. Glycemic control in each patient is quite complex and should be carried out individually. It is generally accepted that a hemodialysis session does not dramatically change the need for insulin. It is recommended to use a dialysate containing glucose at a concentration of 200 mg% in diabetes mellitus, which reduces the risk of both hyper- and hypoglycemia. Metabolic control in DN at the stage of CRF is extremely important in the complex of therapeutic measures, since inadequate glycemic control initiates a tendency to infectious complications and can lead to a sharp increase in the volume of extracellular fluid, including the thirst mechanism. Issues of compensation for diabetes in DN are complex

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ПРОБЛЕМЫ ПРОДОВОЛЬСТВЕННОЙ БЕЗОПАСНОСТИ

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Аннотация: *В данной статье раскрыты проблемы и основные направления обеспечения населения нашей страны качественными продуктами питания и безопасности пищевых продуктов.*

Ключевые слова: *Продовольственная безопасность, сельско-хозяйственная продукция, экологически чистая продукция, стабильность, мир, население, голод, производство.*

Мир шкала населения повысился идти не только еда продукты, социально-экономический случаи слишком серьезный эффект шоу. безопасность очень широкий значение концепция будучи первым в соответствии независимый государства другой в штаты точно еда продукты относительно зависит, то есть подчиненный что это не так означает Также население необходимость физиологический стандарты подходящий соответственно потребление товары с достаточно уровень предоставить иметь в виду держит

ООН из Еда и деревня экономика организация и Весь мир Здоровье Сохранять организация информация согласно настоящему в то время из 840 миллионов в мире больше, чем человек, то естьпочти каждый 8 человека один сыт по горло не ем Большинство последний исследования пока планета населения 30% от увеличивается сыт по горло не ем из-за самый основной микроэлемент и витамины отсутствие от проблемы страдания курение 52 в стране голода « серьёзный », « захватывающий » степени примечание сделанный показывает . От голода страдания курение населения большинство, то есть, 520 миллион избыток Азиаты что подчеркивать это допустимо.

Население число быстрый повысился собираюсь еда продукты работа выпускать возможности быть ограниченным из-за много страны население хорошее качество еда с предоставлять проблема основной к проблеме крутится.

Узбекистан Республика в годы независимости Деревня экономика в поле очень большой достижения передать вошел, в том числе деревня экономика продукты работа выпускать размер 2 равный повысился.

В нашей стране еда безопасность обеспечение граждан здоровье и его жизнь улучшение общества социально-экономический ситуация стабильный развитие, национальный безопасность и страна независимость стабильный сохранять основной направления одному стал В этом отношении В республике население хорошее качество еда продукты с стабильный обеспечение , деревня экономика продукты производители поддержка – поддерживать в соответствии с стратегический с точки зрения целеустремленный и последовательный меры сделанный увеличивается .

Узбекистан Республика Президент Шаукат Миромонвич Мирзиёев к 2017 год 7 февраля подписано «2017-2021 в годах Узбекистан Республика разработка 5 та приоритет направления в соответствии с Действия стратегия » о Указ экономика разработка и либерализации приоритет направления слишком еда безопасность отдельно внимание ориентированный , структурный изменения углубление и деревня экономика работа выпускать последовательный развивать , страна еда безопасность более укрепление , экологический чистый продукты работа выпускать расширять , сельскохозяйственного сектора экспорт потенциал значительный уровень увеличивать приоритет задача как отмечено .

Президент на 2019 год намеревался самый важный приоритет задачи о Высокий Сборка В петиции « Деревня на ферме от реформ цель экономическая выгода чтобы увидеть с вместе с едой безопасность предоставлять и люди благополучие от повышения состоит из тот факт, что примечание сделанный в соответствии с Министры Суд "2019 - 2024 год в годах в нашей стране еда - еда безопасность предоставлять национальный программа подтверждение о ” ги решение проект работа выпущено. решения производительность сегодняшний в день в нашей стране еда безопасность в обеспечении программа действие существование услуга делает

этом отношении следующее еда безопасность обеспечения основной направления достиг определяется как:

- еда безопасность в поле архитектурный и юридический база улучшение;
- деревня на ферму намеревался земли и вода ресурсы разумный использовать

- основной вроде деревня экономика и еда продукция, сырье внутренний работа выпускать стабильный разработка;

- животноводство, птицеводство, рыбалка поле стабильный разработка, продуктработа выпускать объемы увеличивать, еда база укрепление;

- деревня экономика и еда продукты работа выпускать ниже структура улучшить

- еда продукты безопасность предоставлять;

- население все слои еда продукты с быть предоставлено для экономический возможности увеличить

- еда безопасность предоставить состояние к чтобы помещать и контроль делать

Специалисты подчеркнуть в соответствии с 2022 год январь-сентябрь месяцы деревня, лес и рыбалка экономика продукция (услуги). общий объем 248,6 трлн. сум или 2021 год подходящий к периоду по сравнению с 3,6 % к увеличился

В нашей стране сделанный увеличивается реформ подарок этап выращивание фруктов и овощей длинный в течение определенного периода времени стабильный разработка предоставление сеть эффективность увеличивать через еда продукты был требовать удовлетворить, его безопасность предоставлять, экспортировать расширять и наших людей свадьба условия давать возможность дает

Население хорошее качество еда продукты с достаточно уровень предоставлять страна еда безопасности один часть считается Население основной еда типы был потребности удовлетворить еда цена и качество гармония предоставлять и еда безопасность состояние к гарантированный социально-экономический разработка основной из условий это один

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KINEMATIKA BO‘LIMINI O‘QITISHDA YANGI PEDAGOGIK TEXNOLOGIYALARDAN FOYDALANISH SAMARADORLIGI

Muxtorova Ismigul Axliddin qizi
Andijon davlat pedagogika instituti talabasi

ANNOTATSIYA:

Mazkur maqolada kinematika bo‘limini o‘qitishda yangi pedagogik texnologiyalarning qo‘llanilishi va ularning ta’lim samaradorligini oshirishdagi ahamiyati tahlil qilinadi. Axborot-kommunikatsiya texnologiyalari (AKT), interaktiv dasturlar, loyihalarga asoslangan o‘qitish usullari va simulyatsiyalar orqali o‘quvchilarda kinematikani o‘rganishga qiziqishni kuchaytirish, hamda mustaqil va jamoaviy o‘rganish ko‘nikmalarini rivojlantirish imkoniyati ko‘rsatib o‘tiladi.

Kalit so‘zlar: *Kinematika, pedadodik texnologiyalar, fizika o‘qitish, muammoli ta’lim, guruhda ishlash, ta’lim samaradorligi, innavatsion ta’lim usullari.*

Kirish: Kinematika — bu fizikada jismlarning harakatini o‘rganadigan bo‘lim bo‘lib, unda tezlik, yo‘l, tezlanish kabi tushunchalar kiritiladi. Ushbu mavzuni o‘rganishda nafaqat nazariy bilimlarni egallash, balki ularni amaliyot bilan bog‘g‘lash ham muhimdir. Zamonaviy ta’limda yangi pedagogik texnologiyalardan foydalanish orqali mavzuni chuqurroq o‘rganish imkoniyatlari kengaymoqda. Shu nuqtai nazardan, o‘quvchilarning kinematik tushunchalarni yanada yaxshi tushunishlari uchun zamonaviy texnologiyalardan foydalanish muhim ahamiyatga ega.

Kinematikani an’anaviy o‘qitishning kamchiliklari. Kinematika bo‘limini an’anaviy usulda o‘qitish ko‘p yillardan beri qo‘llanib kelinayotgan bo‘lsa-da, bugungi kunda o‘quvchilarning ehtiyojlari va zamonaviy ta’lim talablariga to‘liq javob bera olmaydi. Quyida an’anaviy o‘qitish usulining kamchiliklari haqida batafsilroq to‘xtalib o‘taman:

Nazariyaga asoslangan yondashuvning ustunligi. An’anaviy usulda o‘qitish ko‘pincha nazariy bilimlarni etkazishga asoslanadi, ya’ni darsning asosiy qismi o‘qituvchi tomonidan tushuntirish va o‘quvchilar tomonidan eshitish orqali olib boriladi. Bunday darslarda o‘quvchilarning faolligi kam bo‘lib, ular mavzuni quruq ma’lumot sifatida qabul qiladilar. Kinematika bo‘yicha nazariy tushunchalarni eshitish

orqali o‘rganish o‘quvchilarda chuqur tushunishni shakllantirmaydi va amaliyot bilan bog‘lash imkonini bermaydi.

Amaliy tajribalar va ko‘rgazmalilikning yetishmasligi. Kinematika harakatlarni o‘rganadigan fan sifatida vizual va amaliy ko‘rgazmalarni talab qiladi. An’anaviy darslarda bunday ko‘rgazmalilik imkoniyatlari cheklangan bo‘lib, o‘quvchilar mavzuni tushunishda qiynalishlari mumkin. Ko‘rgazmasiz ta’lim o‘quvchilarning faqat nazariy tushunchalarini rivojlantiradi va harakatning real misollarini kuzatish imkoniyatini bermaydi.

O‘quvchilarning faolligi va qiziqish darajasining pastligi. An’anaviy usulda darsda o‘qituvchi asosiy rolni o‘ynaydi, o‘quvchilar esa ko‘pincha passiv tinglovchi sifatida qoladilar. Bu darsga nisbatan qiziqishni kamaytiradi va o‘quvchilarning o‘z bilimini mustaqil rivojlantirishga undamaydi. Kinematika kabi murakkab mavzularda o‘quvchilarning faol ishtiroki zarur, ammo an’anaviy o‘qitish bunga imkon bermaydi.

Moslashuvchanlikning cheklanganligi. An’anaviy o‘qitish odatda barcha o‘quvchilarga bir xil taqdimot shaklini taklif qiladi. Shu sababli, har bir o‘quvchining individual bilim darajasi va tushunish qobiliyati inobatga olinmaydi. O‘quvchilar individual yondashuv va qo‘shimcha ko‘rgazmalar talab qilganda ham, an’anaviy yondashuv buni ta’minlay olmaydi. Bu o‘quvchilarning tushunish va qabul qilish darajasida farq keltirib chiqaradi.

O‘zlashtirish darajasining pastligi va sinab ko‘rish imkoniyatining yo‘qligi. An’anaviy o‘qitishda kinematikaga oid tushunchalar va formulalar ko‘p o‘qituvchi tomonidan berilgan tayyor ma’lumotlarga asoslanadi, o‘quvchilarga sinov, izlanish yoki o‘z natijalarini o‘rganish imkoniyati yetarli darajada berilmaydi. Masalan, o‘quvchilar o‘zlari tezlik va tezlanishni o‘lchash yoki jismning masofaga bog‘liq harakatini tahlil qilish imkoniga ega bo‘lmaganida, tushunchalarni amaliyotda sinab ko‘rish qiyinlashadi.

Kinematikani o‘qitishda yangi pedagogik texnologiyalarni qo‘llashning asosiy afzalliklariga to‘xtalib o‘tamiz:

Axborot-kommunikatsiya texnologiyalari (AKT). AKT yordamida o‘qituvchilar turli interaktiv dasturlar, mobil ilovalar va simulyatsiyalar yordamida o‘quvchilarga kinematik hodisalarni ko‘rgazmali ravishda namoyish eta oladilar. Masalan, GeoGebra, PhET kabi simulyatsiya dasturlari orqali o‘quvchilar tezlik, masofa va vaqt o‘rtasidagi bog‘liqliklarni o‘z ko‘zi bilan ko‘ra oladi va sinab ko‘rishi mumkin. Bu o‘quvchilarda mavzuga nisbatan qiziqishni oshiradi va tushunchalarni vizual tarzda mustahkamlaydi.

Tarmoqli o‘qitish (Blended Learning). Tarmoqli o‘qitish modelida an’anaviy o‘qitish va raqamli texnologiyalardan foydalanish birlashtiriladi. O‘quvchilar darsdan oldin yoki keyin mavzuga oid qo‘shimcha materiallarni onlayn o‘rganib chiqishlari

mumkin. Shu tarzda, o‘quvchilar mustaqil tarzda o‘z bilimi ustida ishlash imkoniyatiga ega bo‘ladilar va darsga yaxshi tayyorlanib keladilar.

Loyihalarga asoslangan o‘qitish va jamoaviy ishlash. Loyihalarga asoslangan o‘qitish yondashuvi o‘quvchilarning bilimlarni jamoada mustaqil qo‘llashlarini rag‘batlantiradi. Masalan, o‘quvchilar guruhlarda ishlash orqali turli kinematik jarayonlarni tahlil qilish, natijalarni taqdim qilish va bir-birlariga taqdim qilish orqali mavzuga chuqurroq sho‘ng‘iydilar.

Kinematikada simulyatsiya va interaktiv dasturlarning roli. Kinematika bo‘limida foydalanish mumkin bo‘lgan interaktiv vositalar, masalan, simulyatsiyalar va dasturlar, o‘quvchilarning mavzuni chuqurroq tushunishlariga yordam beradi. Ushbu texnologiyalar yordamida o‘quvchilar turli xil tezlik, masofa va tezlanish qiymatlarini sinab ko‘rib, natijalarni solishtirishi mumkin.

Zamonaviy texnologiyalar orqali o‘qitish samaradorligi. Yangi texnologiyalar orqali o‘qitish natijasida o‘quvchilar mavzuni qiziqarli va chuqurroq o‘rganadilar. Bunday texnologiyalar o‘quvchilarni faollikka chorlash bilan birga, ularning mustaqil o‘qitish ko‘nikmalarini ham rivojlantiradi. Loyihalarda jamoaviy ishlash, sinfdagi interaktiv muhit va simulyatsiyalar orqali ko‘rgazmali taqdimotlar bilan o‘quvchilar nazariy bilimlarni real jarayonlarga bog‘lash imkoniga ega bo‘ladilar.

Kinematika bo‘limini o‘qitishda yangi pedagogik texnologiyalardan foydalanish o‘quv jarayonini yanada samarali qiladi va o‘quvchilarda mavzuga nisbatan qiziqishni kuchaytiradi. Axborot-kommunikatsiya texnologiyalari, tarmoqli o‘qitish va loyiha asosida ishlash orqali o‘quvchilarning nafaqat nazariy bilimlari, balki amaliy ko‘nikmalari ham rivojlanadi. Shu sababli, zamonaviy o‘qituvchilar o‘z darslarida yangi texnologiyalardan kengroq foydalanishlari tavsiya etiladi.

Xulosa qilib aytganda, kinematikani o‘qitishda yangi pedagogik texnologiyalarni qo‘llash zamonaviy ta’limning muhim talablaridan biri bo‘lib, ta’lim jarayonining samaradorligini sezilarli darajada oshiradi. Yangi texnologiyalar o‘qitishni faqat nazariy bilimlarni o‘zlashtirish bilan cheklamay, balki talabalarning mustaqil o‘qish ko‘nikmalarini rivojlantirish, analitik fikrlash qobiliyatini mustahkamlash va kinematik jarayonlarni real hayotda tushunishlariga yordam beradi. Bu esa nafaqat fanlararo bog‘lanishni kuchaytiradi, balki o‘quvchilarda ilm-fan va texnikaga qiziqishni oshirishga ham xizmat qiladi.

O‘quvchilar yangi texnologiyalar yordamida murakkab fizik jarayonlarni o‘zlari mustaqil kuzatishlari va tahlil qilishlari mumkin. Masalan, simulyatsiya dasturlari orqali real voqelikda xavf tug‘dirishi mumkin bo‘lgan tajribalarni amalga oshirish imkoniyati mavjud. Bu texnologiyalar yordamida murakkab hodisalarni vizualizatsiya qilish va grafiklar, diagrammalar yordamida ularni aniq tasvirlash mumkin bo‘ladi, bu esa talabalarga murakkab kontseptlarni osonroq anglashga yordam beradi. Ta’lim

jarayonida bunday usullar qo‘llanilishi o‘quvchilarning o‘quv motivatsiyasini kuchaytiradi va darslarni yanada jonlantiradi.

Shuningdek, yangi texnologiyalarni qo‘llash o‘qituvchilarga ta’lim jarayonini individualizatsiya qilish imkoniyatini yaratadi. Har bir o‘quvchi o‘zining bilim darajasi va tezligiga mos ravishda topshiriqlarni bajara oladi. Buning natijasida kuchli o‘quvchilar yanada chuqurroq bilim olishi mumkin bo‘lsa, yordamga muhtoj o‘quvchilarga esa qo‘shimcha tushuntirish va amaliy mashqlar bilan mustahkamlanadi. Bu jarayon o‘quvchilarni teng ta’lim olish imkoniyati bilan ta’minlaydi va ularning bilim darajasidagi farqni kamaytirishga xizmat qiladi.

Bundan tashqari, yangi texnologiyalarni qo‘llash orqali o‘quvchilarning o‘qish jarayonidagi faolligini oshirish, ularning qiziqishlarini uyg‘otish, bilimlarni ijodkorlik bilan o‘zlashtirish imkoniyati yaratiladi. O‘quvchilar virtual laboratoriyalar va interaktiv mashqlar yordamida mustaqil ravishda yangi bilimlarni kashf qilish imkoniyatiga ega bo‘lishadi. Bu esa ularning fikrlash qobiliyatini, muammolarni hal qilish ko‘nikmalarini va ijodiy yondashuvini rivojlantiradi. Bunday o‘quv jarayoni zamonaviy talab va ehtiyojlarga javob beradi va talabalarda o‘quv jarayoniga nisbatan mas’uliyatni oshirish, mustaqil ravishda bilim olishga qiziqish uyg‘otishga xizmat qiladi.

Shu bilan birga, yangi pedagogik texnologiyalarni qo‘llash ta’lim jarayonining samaradorligini oshirishga, bilimlarning barqarorligi va amaliyotda qo‘llanishini kuchaytirishga yordam beradi. Zamonaviy texnologiyalar orqali olgan bilimlarni real hayotiy muammolarni hal qilishda qo‘llash imkoniyati o‘quvchilarni nazariy bilimlarni amaliyot bilan bog‘lashga o‘rgatadi. Bu esa kelajakda yuqori malakali, mustaqil fikrlashga va amaliyotda qo‘llanadigan bilimga ega mutaxassislarni tayyorlash uchun zamin yaratadi.

Yuqoridagilardan kelib chiqib aytganda, kinematikani o‘qitishda yangi pedagogik texnologiyalarni joriy etish o‘quvchilarning o‘quv jarayoniga qiziqishini oshirib, bilim olish jarayonini samarali, interaktiv va ijodiy holga keltiradi. Bu esa ularning nazariy va amaliy bilimlarini mustahkamlash, ilmiy-tahliliy fikrlashini rivojlantirish, shuningdek, fan va texnologiya sohasida kelajakda muvaffaqiyatli faoliyat yuritishlariga mustahkam asos yaratadi. Yangi texnologiyalarni o‘quv jarayoniga joriy qilish nafaqat ta’lim sifatini oshirish, balki jamiyatning intellektual salohiyatini kuchaytirish, fan va texnologiyalar sohasida ilg‘or taraqqiyotga erishish uchun ham muhimdir.

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