

МЕДИЦИНА, ПЕДАГОГИКА И ТЕХНОЛОГИЯ: ТЕОРИЯ И ПРАКТИКА

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MORPHOLOGICAL AND MICROSCOPICAL PARAMETRES OF THYMUS IN NEWBORN FETUSES

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Abstract. The formation of the immunity system in ontogenesis, in particular the central organ of its thymus, is determined by the combination of the relationship between mother and fetus and the course of the period of early adaptation of offspring to conditions outside uterine life. As a rule, in early postnatal ontogenesis, the immune system is in a transient state and continues to form under the influence of various influences of external factors. The uncomplicated course of pregnancy largely determines the normal course of the immunological relationship between mother and fetus, and determines the development of a full-fledged immune system and its central and peripheral organs in the offspring in postnatal ontogenesis.

Keywords: newborns, thymus, anatomy of a thymus, histology of a thymus, gestational maturity of a thymus.

МОРФОЛОГИЧЕСКИЕ И МИКРОСКОПИЧЕСКИЕ ПОКАЗАТЕЛИ ВИЛОЧНОЙ БУМАГИ У НОВОРОЖДЕННЫХ ПЛОДОВ

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Абстракт. Формирование системы иммунитета в онтогенезе, в частности центрального органа его тимуса, определяется сочетанием взаимоотношений матери и плода и течением периода ранней адаптации потомства к условиям внеутробной жизни. Как правило, в раннем постнатальном онтогенезе иммунная система находится в транзитном состоянии и продолжает формироваться под влиянием различных воздействий внешних факторов. Неосложненное течение беременности во многом определяет нормальное течение иммунологических взаимоотношений между матерью и плодом, а также определяет развитие полноценной иммунной

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системы, ее центральных и периферических органов у потомства в постнатальном онтогенезе.

Ключевые слова: новорожденные, тимус, анатомия тимуса, гистология тимуса, гестационная зрелость тимуса.

YANGI TUG'ILGAN HOMILADA TIMUSNING MORFOLOGIK VA MIKROSKOPIK PARAMETRLARI.

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Abstrakt. Ontogenezda immunitet tizimining, xususan, timusning markaziy organining shakllanishi ona va homila o'rtasidagi munosabatlarning kombinatsiyasi va naslning bachadon hayotidan tashqari sharoitlarga erda moslashish davri bilan belgilanadi. Qoida tariqasida, erda postnatal ontogenezda immunitet tizimi vaqtinchalik holatda bo'lib, tashqi omillarning turli ta'siri ostida shakllanishda davom etadi. Homiladorlikning asoratsiz kechishi ko'p jihatdan ona va homila o'rtasidagi immunologik munosabatlarning normal yo'nalishini belgilaydi va tug'ruqdan keyingi ontogenezda avlodlarda to'liq immunitet tizimi va uning markaziy va periferik organlarining rivojlanishini belgilaydi.

Kalit so'zlar: yangi tug'ilgan chaqaloqlar, timus, timus anatomiyasi, timus gistologiyasi, timusning homiladorlik etukligi.

Relevance. In the embryonic aspect, the thymus gland is one of the first endocrine organs and the first lymphoid organ. In the early stage of embryonic development, bone marrow lymphoblasts passing through the thymus become thymocytes that enter the blood and other lymphoid organs not only during the embryonic period, but throughout the life of the body. Thus, the thymus is an organ regulator of the immune system and at the same time a producer of lymphoid cells, which are the basis of the body's protective system against pathogens and foreign molecules [5,7,9,11,14,16,20]. The thymus is structurally a complex organ consisting of stroma and regenerative lymphoid tissue. The stroma is about 10% of the organ mass and consists of reticular and epithelial cells [1,4,14,16]. Thymic parenchyma is represented by thymocytes and lymphocytes migrating from the bone marrow. The impact of pathogenic climatoecological factors in pregnant women

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causes a malfunction of almost all the main systems of the body, mother and fetus, including the immune system [2,3,9,11]. It is known that the thymus gland, being the central organ of immunogenesis, can undergo transformations occurring under the influence of various pathogenic factors occurring in the mother's body during pregnancy. As a result of studying the thymus by modern submicroscopic, radiographic, immunohistochemical and biochemical methods of research, new data on the morphofunctional organization of the organ have now been obtained. Histologically, the thymus represents, as if a three-layer organ consisting of a connective-woven stroma, an epithelial base and lymphoid contents, the latter in the developed thymus accounts for the bulk of the organ. The connective-tissue stroma is represented by interlobular partitions - septa and an organ capsule. The perivascular space is formed by intercellular matrix, fibroblasts, fibers, reticular cells and labrocytes and macrophages [10,13,19,20].

Research material and methods. The thymus of newborns born at term and killed mainly from asphyxia or traumatic brain injury at the time of birth has been studied.

Study methods: general morphological study of hematoxylin and eosin coloration; histometry: measurement of the thickness of the capsule, cortex and cerebral layer of the lobules; volume ratio of structural and cellular elements of thymus; statistical processing of the obtained digital data.

Autopsies for the review histological, histochemical, immunohistochemical, electron microscopic methods were taken no later than 30 minutes from the moment of death, followed by fixation in Carnois, Buen, Becker solutions and 10% neutral buffered formalin. Paraffin sections 4-5 μm thick were stained with Ehrlich hematoxylin with docraca eosin, Weigert iron hematoxylin with docraca according to Van Gison and Mallory. Glycosaminoglycans (GAGs) were differentiated with 0.1% toluidine blue on citrate phosphate buffer at different pH values (3.5-6.5) with bacterial and testicular hyaluronidase section control.

Results of the study. Depending on the significance of the fruit factor in the organ complex and its development, as well as in the formation of elements of the functional system "mother-placenta-fetus," the measurement parameters of the organs and morphological features of the thymus gland were compared with 15 somatometric parameters of the fetuses of 21-26 weeks of gestation with induced termination of pregnancy for medical reasons. Analysis of somatometric parameters of fetuses and newborns in induced and spontaneous termination of pregnancy at 21

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26 weeks showed that harmonious and proportional somatic development is characteristic of uncomplicated course of pregnancy. With this type of somatic development, the weight and length of the body, the circumference of the head, chest, shoulder length, hip and weight and height in the coefficient increase evenly and directly proportional to the gestation period. Positive dynamics of the above somatometric parameters was revealed both in the whole group and in subgroups with a two-week interval: 21-22; 23-24 and 25-26 weeks. Thus, the increase in fetal weight in 23-24 weeks is 171 g, in 30 weeks - 193 g. Body length (parietal-heel size) every two weeks increases by 3-4 cm. The positive dynamics of parietal-heel size is directly associated with an increase in linear parameters of the lower limb, in particular, the hip, the length of which is 25-26 weeks is 1.5 times higher than the same parameter in 23-24 weeks. The increase in the linear parameters of the lower leg within the considered subgroups is not statistically significant. The length of the upper limb varies in the range from 1.1 to 1.5 cm, while the shoulder grows most intensively (0.7-0.9 cm). The growth intensity of the upper limbs, as well as the lower limbs, stabilizes from 26-27 weeks of gestation. The circumference of the shoulder, forearm, thigh and lower leg, which characterizes the increase in muscle mass and subcutaneous fat, change in accordance with the increase in gestational term, reaching maximum numbers at weeks of gestation. It is unlawful to consider a complete analysis of anthropometric parameters without taking into account certain coefficients. The mass-growth coefficient during 21-26 weeks of gestation tends to increase progressively, especially during weeks of intrauterine development, which confirms the positive dynamics of weight and linear body parameters at this stage of ontogenesis. Breast-growth coefficient is $0,58 \pm 0,06$ and remains stable within the given gestation period, which indicates proportional somatic development of fetuses in the middle fetal period. Additionally, the proportionality of the development of fetuses was estimated using coefficients such as the ratio of the length of the upper and lower limbs to the length of the body. The coefficient (ratio of arm length to parietal-heel length), as well as breast-growth, changed statistically not significantly and was $0.39 \pm 0,015$. A slightly different dynamics was revealed from the side of the coefficient - the ratio of the length of the lower limb to the parietal-heel length. Given the stability of this parameter, fetuses 21-22 and 23-24 weeks of gestation showed an increase in this coefficient by weeks of development, which confirms the enhanced growth of the lower limb at this stage of ontogenesis. The harmony and proportionality of the somatic development of fetuses is confirmed by the presence

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of a strong straight line ($r = 0.7$) correlation between the mass of the fetus and the circles of the chest, head, shin length, as well as linear parameters of the arm and shoulder. Moderate positive relationship ($r = 0.5$) is established between fetal mass and leg and hip lengths, as well as circumference of both extremities in general and their components. The revealed dynamics of the somatometric parameters of the fetuses 21-26 weeks of gestation fits into the concept of the physiological type of intrauterine development, which is characterized by a relatively uniform increase in body weight and length, circumference of the head, chest, shoulder length, hip and mass-growth coefficient. The conjugation of somatic development with the formation of the central organ of the immune system in fetuses 21-26 weeks of gestation is confirmed by the presence of a moderate direct ($r = 0.6$) relationship between the mass of the fetal growth parameters and the linear-weight parameters of the thymus. With a volume of significant correlation relationships equal to 21.4%, a direct positive relationship ($r = 0.6$) was found between the mass, length of the fetus, chest circumference and organ metric parameters of the thymus, i.e. its mass, length and width. In the enlarged subgroups (21-24 and 25-26 weeks), as in general at the stage of 21-26 weeks of development, the metric parameters of the thymus increase significantly in proportion to the gestation period ($p < 0.001$). The maximum increase in these values and a twofold increase in the volume of correlation relationships in 25-26 weeks of gestation indicates the intensity of development of both soma and the central organ of the immune system at this stage of fetogenesis. The growth rate of thymus mass in fruits 25-26 weeks of gestation is 3 times higher than the corresponding parameter in fruits 21-22 weeks of development and averages 2.7-3.2 g. A reliable increase in the linear size of the organ confirms its growth, both in length and in width. Cytokeratin expression by the outer layer epithelial cells reflects the degree of their differentiation and indicates the ectodermal origin of the latter [2,3,7,8,14,20]. The second type of epithelial cell reticulo acquires a stellate shape through cytoplasmic processes. Epithelial cells of this type contain a rounded nucleus, 12 μm in diameter with 1-2 nuclei and finely condensed chromatin. A few tonofilaments, multivesicular bodies, vacuoles, short profiles of a rough endoplasmic network and a well-developed lamellar complex are visualized from ultrastructures in the cytoplasm. In the subcapsular zone, epithelial cells are found, in the cytoplasm of which, along with vacuoles and small electron-dense inclusions, there are single thymocytes. Cytoplasmic processes of reticuloepithelial cells are located between lymphocytes, contact them and are named

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cells [12,14,15,16,18]. In the early stages of the midfetal period, that is, in fetuses 21-22 weeks of gestation, the epithelial cells of a number of lobules migrate to the surrounding mesenchyma, forming various cell strands. The last 23-24 weeks of gestation in the thymus of the fruit, having high growth potency, perform a cambial function and contribute to the formation of growth zones on the periphery of the lobules. Among subcapsular zone lymphocytes, lymphoblasts are predominant, corresponding in antigenic composition to pre-T lymphocytes and expressing CD2 antigens on the membrane (expression coefficient - 2.79 units). The nucleus of lymphoblasts with a retinal chromatin structure, among which are 1-2 nucleoli. The cytoplasm covers a minimal area, contains free ribosomes, single cisterns of the granular endoplasmic reticulum and mitochondria. An additional indication of thymocyte proliferation activity is an increase to 0.42 AU in the mean histochemical coefficient (GCA) of deoxyribonuclein substances in subcapsular lymphocytes. The GCS value within all structural and functional zones increases in parallel with the gestation period and averages 0.27 conditional units.

In addition to lymphoid and epithelial cells, single macrophages with PAS-positive inclusions are found in the subcapsular zone, and with a higher frequency they are determined in the thymus of the fetuses of 26-27 weeks of gestation. The density of cell elements in the subcapsular zone is $17,76 \pm 02$ cells and increases directly in proportion to the gestation period. In 26-27 weeks of development, the number of cells in a unit area increases to 22. The inner cortical zone of the lobules is dominated by medium-diameter lymphocytes expressing CD2, CD1 antigens, which indicates the ongoing antigen-independent differentiation of lymphocytes. However, the formation of receptors and antigen is also characteristic of this zone, which is confirmed by a significant increase in the expression of CD3 T lymphocytes. From the cell microenvironment of lymphocytes, dark-type epithelial cells prevail, characterized by an abundance of ultrastructures, which indicates their functional activity [6,9,10,11,13,19]. T-lymphocytes of the medullary zone, unlike lymphocytes of the cortex, mostly have a mature phenotype, with antigens CD 2, CD3, which confirms the completion of the stage of their differentiation.

Conclusion. Thus, the intrauterine period from 21 to 26 weeks of gestation is characterized by intensive somatic development, which, according to the theory of intrauterine cell growth, is based on high proliferative activity of cells in combination with a progressive increase in their size. Comparative analysis of somatometric parameters in the enlarged groups (21-22 and 25-26 weeks) confirmed

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the intensity of somatic development of fetuses at the stage of 25-26 weeks. Taking into account the peculiarities of the dynamics of somatometric parameters and the factors specifying them, this stage of ontogenesis should be classified as critical. Exposure to pathogenic factors, including intrauterine infections, can cause compensation disruption at this stage of gestation, lead to preterm birth, and the birth of infants with intrauterine retardation syndrome. The thymus gland of the fruits of 21-26 weeks of gestation resembles a thymian leaf in shape, represented by two lobes connected at the base by an isthmus and covered with a thin connective tissue capsule. In 85 fetuses (74.7%), from 21-22 weeks of gestation, asymmetry of the lobes is detected, the left lobe in linear parameters exceeds the right. In addition to two lobes in 91 fruits (80%), additional lobes (up to 4) were found at the base of the thymus, rounded in shape from 0.4 to 0, 8 cm in diameter [21-23]. Thus, the main criteria for the gestational maturity of the fetus thymus at the stage of 23-24 weeks are incomplete cortico-medullary differentiation in 18-20% of lobules, more than twice the prevalence of specific volume ($58,29 \pm 2,11\%$) cortical matter above the brain ($23,87 \pm 0,75\%$) with a cortico-medullary coefficient of 2.5 units and a specific volume of vessels in interstitial tissue - $0,46 \pm 0,07\%$, with a maximum density of cell elements ($29,94 \pm 0,06$ cells) in the internal cortical zone, with an average histochemical coefficient of deoxyribonucleic substances in the nuclei of lymphocytes - 0.27 cond. units and glycoproteins (0.36 conventional units).

LITERATURE

1. Adaibaev T.A. et al. Morphology of the thymus gland in early ontogenesis in white rats//Bulletin of the Kyrgyz-Russian Slavic University. – 2020. - T. 20. – №. 9. - S. 154-156.
2. Bazhin S. Yu et al. Some morphometric and pathomorphological features of the thymus of newborn rats after antenatal exposure to ethanol//Morphology. – 2014. - T. 145. – №. 3. - S. 24-25.
3. Gagaev Ch. G. et al. Echographic criteria for assessing the thymus gland of fetus and newborn children//Bulletin of the Peoples' Friendship University of Russia. Series: Medicine. – 2010. – №. 5. - S. 46-55.
4. Goryannikova I.N. Morphological features of the stromal-vascular component of the thymus of stillborn children and children under one year of life from mothers who do not follow a healthy lifestyle//Morphologia. – 2015. – №. 9, № 3. - S. 12-17.
5. Grigorieva E. A. The use of lectin histochemistry to study the morphology of thymic epithelioreticulocytes// Klinichna anatomiya that is operative khirurgiya. – 2016. – №. 15, № 1. - S. 46-49.

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Researchbib Impact factor: 11.79/2023

SJIF 2024 = 5.444

Том 2, Выпуск 4, 30 Апрель

6. Sh. O. Korzhavov et al. Central Asian Journal of Medical and Natural Science. – 2023. - VOL. 4. – №. 5. - S. 602-605.
7. Korzhavov Sh. O., Ismoilov O. I., Sultanbaev Sh. A. Morphological Structure of the Thymus Gland in Newborns With Congenital Various Viral Infection//Central Asian Journal of Medical and Natural Science. – 2023. - VOL. 4. – №. 5. - S. 527-534.
8. Korzhavov Sh. O., Khusanov E.U., Shermamedova K.T. Features of the body of gassal human thymus in newborns//Models and methods for increasing the efficiency of innovov creative research. – 2024. - VOL. 3. – №. 30. - S. 183-189
9. Zemlyanitskaya E.I. and others. Morphological characteristic of the thymus of newborns of American mink of various color genotypes//Bulletin of NGAU (Novosibirsk State Agrarian University). – 2017. – №. 4. - S. 83-89.
10. Ziyaev Sh. A. U. Morphological signs of thymus in sepsis in preterm//Re-health journal. – 2021. – №. 3 (11). - S. 107-111.
11. Kuzmenko L. G. et al. Thymus mass in human fetuses and newborn children (according to morphological and ultrasound data)//Educational Bulletin "Consciousness." – 2010. - Т. 12. – №. 1. - S. 68-70.
12. Nabiev B. B., Khudoiberdiev D. K. Anatomy of fetal organs of the human lymphoid system (literature review)//Achievements in science and education. – 2020. – №. 16 (70).
13. Pronin V.V. Morphology of the thyroid gland, thymus and adrenal glands in the ontogenesis of Romanov sheep//Yekaterinburg, 2006.-33 p. - 2006.
14. Pchelnikova E.F., Yankovsky I.A., Tishkovskaya T.V. Determination of the gestational age of fetuses and newborns based on a mathematical analysis of their anthropometric indicators//Bulletin of Vitebsk State Medical University. – 2012. - Т. 11. – №. 1. - S. 48-54.
15. Rovda Yu. I. et al. Sonometric parameters of thymus in preterm infants of a 12-month corrected age born with extremely low, very low and low body weight//Pediatrics. GN Speransky Journal. – 2016. - Т. 95. – №. 1. - S. 61-66.
16. Smirnova T. L., Sergeeva V. E. Structure of the placenta and thymus in complications of pregnancy and childbirth//Morphology. – 2008. - Т. 133. – №. 2. - S. 124-125.
17. Stepanik I. A. Morphological changes of the lymph node capsule during physical exertion//Morphology. – 2008. - Т. 133. – №. 2. - С. 129с-129с.
18. Sorokina I.V., Galata D.I. Morphological features of the thymus of fruits and newborns from mothers with preeclampsia// Ukraïnsky morfologichny almanac. – 2010. – №. 8,№ 2. - S. 203-205.
19. Sorokina I.V., Sherstyuk S.A., Remneva N.A. Morphological features of the spleen of children who died between the ages of 1 and 6 months from HIV-

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SJIF 2024 = 5.444

Том 2, Выпуск 4, 30 Апрель

infected mothers// Ukrainsky morfologichnyy almanac. – 2010. – №. 8, № 2. - S. 205-207.

20. Tukhtaev K. R., Rasulev K. K., Guriev S. B. Electron-microscopic analysis of the thymus in post-tonal ontogenesis under conditions of toxic effect on the mother's body//Morphology. – 2008. - Т. 133. – №. 2. - S. 140-140.

21. Tukhtaev K. R., Rasulev K. I., Azizova F. Kh. Morphological features of lymph nodes of rats born under conditions of toxic effect on the mother's body//Morphology. – 2008. - Т. 133. – №. 2. - S. 139-140.

22. Tukhtanazarova S.I. Correlation between morphometric indicators in children of Samarkand in the first period of childhood (3-7 years)//Morphology. – 2008. - Т. 133. – №. 2. - С. 140а-140а.

23. Z. I. Esmurzieva et al. Morphometry of the thymus of fetuses of different gestational ages and full-term newborn babies according to ultrasound data//Pediatrics. GN Speransky Journal. – 2015. - Т. 94. – №. 1. - S. 68-72.

24. Ro'ziyeva, M. (2021). FOLKLORSHUNOSLIKDAGI YANGI BOSQICHLAR VA ULARNING TA'LIM JARAYONIDAGI AHAMIYATI: Mohichehra Ro'ziyeva, BuxDu Boshlang'ich ta'lim nazariyasi kafedراسи mudiri, PhD, dotsent. In *Научно-практическая конференция* (pp. 21-22).

25. Ситора Икромова Акбаровна. (2024). РАЗВИТИЕ СОЗНАНИЯ И ОБУЧЕНИЕ СТУДЕНТОВ ПОНЯТИЯМ БЕССОЗНАТЕЛЬНОГО. *Multidisciplinary Journal of Science and Technology*, 4(3), 157–163.

26. Ниёзова, Д. Б., Кодирова, Н. К., Курбанова, Л. М., Акбаров, Х. И., & Каттаев, Н. Т. (2019). Синтез и физико-химические свойства хитозан-кремнеземных нанокпозиционных материалов. *Universum: химия и биология*, (6 (60)), 68-72.

27. Toshboyeva, S. Q., Hamidov, S. X., & Qurbanova, L. M. (2021). Elektrolitik dissotsiyalanish nazariyasini o'qitishni AKT asosida takomillashtirish. *Science and Education*, 2(3), 357-361.

28. Qurbanova, L. M., & Qurbanova, D. N. (2021). ZOMIN SHIFOBAXSH O'SIMLIKLARINING HUSUSIYATLARI. *Журнал естественных наук*, 1(3).

29. Qurbanova, L. M., Mullajonova, Z. S., & Toshboyeva, S. K. (2021). "NEFTNI QAYTA ISHLASH" MAVZUSINI OQITISHDA INNOVATSION TEXNOLOGIYALARDAN FOYDALANISH. *Science and Education*, 2(3), 362-366.

30. Erkinovich, X. Z., Murodullavena, K. L., Mamadievich, R. Z., Mamirkulovich, M. Z., Xidirovna, L. Z., Oblakulovich, K. S., & Axmadjonovich, S. S. (2021). Improving the Surgical Treatment of Patients with a Biliary Disease Complicated by Mirizsy Syndrome. *Annals of the Romanian Society for Cell Biology*, 25(6), 14697-14702.

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SJIF 2024 = 5.444

Том 2, Выпуск 4, 30 Апрель

31. Курбанова, Л. М., Хидиров, З. Э., & Абдураимов, З. А. (2021). КЛИНИКО-ЭПИДЕМИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ТЕЧЕНИЯ БРУЦЕЛЛЁЗА В ВОЗРАСТНОМ АСПЕКТЕ В САМАРКАНДСКОЙ ОБЛАСТИ. Достижения науки и образования, (1 (73)), 61-68.

32. Qurbanova, L. M., & Toshboyeva, S. K. (2021). KIMYOVIY TAJRIBALAR-O'QUVCHILARNING KIMYODAN TAYYORGARLIK DARAJASINI OSHIRISHDA MUHIM OMIL. Журнал естественных наук, 1(3).

33. Qurbanova, L. M., & Qarshiboyev, B. I. (2021). NAVBAHOR GILLARINING GLITSERIN BILAN MODIFIKASİYALANGAN YUQORI GIDROLIZLANGAN POLIAKRILONITRIL (RS-2-3) ASOSIDA FIZIK-KIMYOVIY XOSSALARINI O'RGANISH. Журнал естественных наук, 1(3).

34. Uktamovich, K. E., Oblakulovich, K. S., Murodullaevna, K. L., Hidirovna, L. Z., & Aslamovna, K. G. (2021). Effects of cellular cord blood on skin pathology in laboratory animals. Central Asian Journal of Medical and Natural Science, 2(1), 116-122.

35. Qurbanova, L. M. (2021). PISA XALQARO BAHOLASH DASTURINING AMALIY AHAMIYATI. Academic research in educational sciences, 2(CSPI conference 1), 1497-1500.

36. Narzullaevna, K. S., Esirgapovich, K. A., Xalimovich, J. M., Murodillaevna, B. R. S. K. L., Solijonovna, U. O., & Naimovich, B. B. (2021). What is Ecology?. Annals of the Romanian Society for Cell Biology, 3341-3345.

37. Qurbanova, L. M., & Suhanbarov, A. M. O. G. L. (2021). ZAMONAVIY TA'LIMGA QO'YILADIGAN TALABLAR. Academic research in educational sciences, 2(CSPI conference 1), 1132-1135.

38. Ro'ziyeva, M. Y., & Azamova, N. U. B. (2024). BADIY ADABIYOTDA MAKON VA ZAMON TUSHUNCHASI VA ULARNING KELIB CHIQISHI. *Analysis of world scientific views International Scientific Journal*, 2(2), 22-26.

39. Ruzieva, M. Y. (2016). EXPRESSION OF ATTITUDE TO COLORS IN TURKIC NATIONAL RITUAL SONGS. *Социосфера*, (4), 50-55.

40. Ro'ziyeva, M. (2021). FOLKLORSHUNOSLIKDAGI YANGI BOSQICHLAR VA ULARNING TA'LIM JARAYONIDAGI AHAMIYATI: Mohichehra Ro'ziyeva, BuxDu Boshlang'ich ta'lim nazariyasi kafedrasini mudiri, PhD, dotsent. In *Научно-практическая конференция* (pp. 21-22).

41. Рузиева, М. Я. (2019). ИСПОЛЬЗОВАНИЕ ИННОВАЦИОННЫХ ТЕХНОЛОГИЙ ПРИ ПРЕПОДАВАНИИ ЖАНРОВ ФОЛЬКЛОРА НА УРОКАХ ЛИТЕРАТУРЫ. ББК 71.0 И74 Редакционная коллегия Ответственный редактор, 46.

42. Zainagalina, L. Z., Petrova, L. V., Suleymanov, R. I., Petrov, V. A., Gaforov, A. K., & Khuziakhmetova, L. D. (2017). Features of realization of score

МЕДИЦИНА, ПЕДАГОГИКА И ТЕХНОЛОГИЯ: ТЕОРИЯ И ПРАКТИКА

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rating system. In Актуальные вопросы высшего профессионального образования (pp. 196-198).

43. Зайнагалина, Л. З., Габдрахимов, М. С., Петрова, Л. В., & Сулейманов, Р. И. (2016). Организация академической мобильности студентов. In Актуальные вопросы инженерного образования-2016 (pp. 46-50).

44. Suleimanov, R. I., Khabibullin, M. Y., & Suleimanov, R. I. (2021, October). Analysis of causes of failure of the electric centrifugal pump elements by the methods of automated diagnostics. In Journal of Physics: Conference Series (Vol. 2061, No. 1, p. 012027). IOP Publishing.

45. Сулейманов, Р. И., Хабибуллина, Р. Г., Габдрахимов, М. С., & Давыдова, О. В. (2016). Проверка на оригинальность текста выпускных квалификационных работ. In Актуальные вопросы инженерного образования-2016 (pp. 76-82).

46. Oblakuovich, K. S., Uktamovich, K. E., Muradovich, Y. M., & Ibragimovich, S. R. (2022). Pathomorphological features of thymus in intrauterine-infected newborns with body hypotrophy. ACADEMICIA: An International Multidisciplinary Research Journal, 12(4), 22-31.

47. Suleymanov, R. I. (2024). MODERN METHODS OF TREATMENT OF CHRONIC GASTRITIS. World Bulletin of Public Health, 32, 80-82.

48. Suleymanov, R. I. (2024). Surgical Intervention for Complicated Peptic Ulcer Disease. American Journal of Pediatric Medicine and Health Sciences (2993-2149), 2(2), 470-475.

49. Сулейманов, Р. И. (2024). ЯЛЛИҒЛАНИШГА ҚАРШИ 2 ТУРДАГИ ДОРИ ВОСИТАЛАРИ ПОЛИПРАГМАЗИЯСИДА БУЙРАКЛАРНИНГ МОРФОМЕТРИК ПАРАМЕТРЛАРИНИНГ ЎРГАНИШ. TECHNICAL SCIENCE RESEARCH IN UZBEKISTAN, 2(2), 166-172.

50. Akbarovna, I. S. (2023). THE DEVELOPMENT OF CONSCIOUSNESS AND THE TEACHING OF CONCEPTS OF THE UNCONSCIOUS TO STUDENTS. TECHNICAL SCIENCE RESEARCH IN UZBEKISTAN, 1(5), 107-114.