AMERICAN JOURNAL OF EDUCATION AND LEARNING
ISSN: 2996-5128 (online) | ResearchBib (IF) = 10.91 IMPACT FACTOR
Volume-4| Issue-1| 2026 Published: |30-01-2026|

EXCHANGE OF TRACE ELEMENTS IN BRONCHIAL-PULMONARY PATHOLOGY IN CHILDREN

https://doi.org/10.5281/zenodo.18288774

Mirraximova M., Kh M. M., Nishanbaeva N. Y.
Tashkent State Medical University (Tashkent, Uzbekistan)
Department of children's diseases

In recent decades, many evidence materials have been collected about the importance of micronutrients to the human organism and animals. In recent decades, many evidence materials have been collected about the importance of micronutrients to the human organism and animals. Based on this data, copper, cobalt, zinc, selenium and some other trace elements were classified into an irreplaceable [10,22] group. In all living organisms, microelements perform various biochemical functions. A great interest in this problem is explained by the high biological activity of microelements, their participation in oxidation-reduction processes, various types of metabolism (protein, fat, carbohydrate, vitamin, mineral), gas exchange, tissue respiration, tissue permeability, cell division, blood formation, growth[6, 4]. The identification of the peculiarities of the exchange of trace elements in the body under various pathological conditions is an urgent area of clinical medicine, since it opens up new opportunities for the elimination of pathochemical reactions that form the basis of pathological processes [13,14]. The identification of the peculiarities of the exchange of trace elements in the body under various pathological conditions is an urgent area of clinical medicine, since it opens up new opportunities for the elimination of pathochemical reactions that form the basis of pathological processes [13,14]. Micronutrients have a significant effect on the fullness of the body's immune response during infection entry [13]. The active participation of metal-retaining compounds in metabolic processes in the body shows the great importance and prospects of research on the role of microelements in normal and pathological conditions. Therefore, the UN Subcommittee on health and medical equipment recommends monitoring the amount of microelements in the human body, such as copper, cobalt, zinc, selenium and other non-noticeable disorders of their metabolism, timely monitoring of the effectiveness of "hidden" diseases, as well as the patient's treatment, identified during a comprehensive examination A.herefore, the UN Subcommittee on health and medical equipment recommends monitoring the amount of microelements in the human body, such as copper, cobalt, zinc, selenium and other non-noticeable

disorders of their metabolism, timely monitoring of the effectiveness of "hidden" diseases, as well as the patient's treatment, identified during a comprehensive examination A. I. Kirsanov et al. (2013). Before covering the issues of micronutrient metabolism in bronchial-pulmonary pathology in children, it is recommended to briefly describe the micronutrients that are important for the life we have studied. Copper. Before covering the issues of micronutrient metabolism in bronchial-pulmonary pathology in childr Before covering the issues of micronutrient metabolism in bronchial-pulmonary pathology in children, it is recommended to briefly describe the micronutrients that are important for the life we have studied. Copper. Its active participation in the exchange of proteins, fats, carbohydrates and vitamins is known [12, 13]. The importance of copper to the human and animal organism is due to the presence in its composition of superoxidismutase, cytochromoxidismutase and other enzymes involved in the respiratory processes of tissues [10, 17]. Copper is an important micronutrient that is a cofactor of various enzymes involved in iron metabolism, collagen synthesis. Copper is an important micronutrient that is a cofactor of various enzymes involved in iron metabolism, collagen synthesis. It is present in the active center of the enzyme lysyloxydase, which forms a correlation between the polypeptide chains of collagen and elastin, forming defective collagen in the deficiency of this metal, in which there is no correlation and disruption of the synthesis of elastic fibers of glycosaminglicans [2, 17]. The copper contained in copper-preserving proteins in itself is essential for the normal growth and development of bone tissue, and also plays an important role in the functioning of the central nervous system [15]. The copper contained in copper-preserving proteins in itself is essential for the normal growth and development of bone tissue, and also plays an important role in the functioning of the central nervous system [15]. In cases of artificially invoked copper deficiency, mammals have developed primary pulmonary emphysema as a result of lysyloxidase inactivation, superoxidismutase depression, and acute reduction of elastin as a result of LPO-related intensification. This led to degradation of antiprotease inhibitors and activation of protiolysis [18, 17, 12]. The liver and its constituent elements - hepatocytes-play a key role in copper metabolism. Copper entering them through the Portal vein vascular system initially binds to metallothionein found in the human liver. The liver and its constituent elements - hepatocytes-play a key role in The liver and its constituent elements - hepatocytes-play a key role in copper metabolism. Copper entering them through the Portal vein vascular system initially binds to metallothionein found in the human liver. Copper, originally bound to metallothionein, later forms part of ceruloplasmin. With its oxidase functions, ceruloplasmin also plays the role of a transport protein that transfers copper to

tissue enzymes, primarily cytochromoxidase [4]. Copper is necessary to participate in the antioxidant defense of the body. It plays a very important role in iron metabolism, actively interferes with the process of hematopoiesis. Copper is necessary to participate in the antioxidant defense of the body. It plays a very important role in iron metabolism, actively interferes with the process of hematopoiesis. In order to transfer hemo Copper is necessary to participate in the antioxidant defense of the body. It plays a very important role in iron metabolism, actively interferes with the process of hematopoiesis. In order to transfer hemoglobin to the synthesizing bone cuticle cells, iron from the gastrointestinal tract and liver reserves must be oxidized into transferine, trivalent, to be embedded in its transport protein. This oxidation requires the presence of the enzyme ceruloplasmin, which contains copper [16, 14]. Copper, manganese, zinc, selenium superoxidismutase, selenium glutathione peroxidase, catalase have been found to be involved. Copper, manganese, zinc, selenium superoxidismutase, selenium glCopper, manganese, zinc, selenium superoxidismutase, selenium glutathione peroxidase, catalase have been found to be involved. These enzymes are components of the antiradical system[16, 10, 13, 16, 12]. The abrupt growth of pper, manganese, zinc, selenium superoxidismutase, selenium glutathione peroxidase, catalase have been found to be involved. These enzymes are components of the antiradical system[16, 10, 13, 16, 12]. The abrupt growth of Pol during phagocytosis is caused by the release of reactive metabolites of oxygen by activated neutrophils and macrophages, which play an important role in intracellular destruction of microorganisms [15, 15, 18]. One of the microelements that, of course, plays a big role in vital processes is cobalt. Cobalt-enters the body, is absorbed in the intestine with food, accumulates in large quantities in the liver, kidneys and other parenchymatous organs. Cobalt-enters the body, is absorbed in the intestine with food, accumulates in large quantities in the liver, kidneys and other parenchymatous ters the body, is absorbed in the intestine with food, accumulates in large quantitie Cobalt-enters the body, is absorbed in the intestine with food, accumulates in large quantities in the liver, kidneys and other parenchymatous organs. It affects growth and reproduction, the metabolism of proteins, fats, carbohydrates, vitamins and has a positive effect on blood formation [13]. Cobalt is better absorbed by the human and animal organism than other trace elements. Thus, the human organism, according to most researchers, accepts between 20 and 95% of the amount of cobalt present in ration [2]. In 1948, Crystal vitamin V12 was isolated, which includes cobalt. This vitamin is currently successfully used in practice to treat various forms of anemia and many other diseases. In 1948, Crystal vitamin V12 was isolated, which includes cobalt. This vitamin is currently

successfully used in practice to treat various forms of anemia and many other diseases. It activates enzymes - Peptidase, catalase, intestinal phosphatase, arginase and other enzymes. The introduction of cobalt in additional amounts has a beneficial effect on the formation of antitelo [13]. The richest products in cobalt include liver, eggs, legumes, garlic, meat, milk, fish, beets, lettuce, parsley, raspberries, black currants, buckwheat porridge, wheat.e richest products in cobalt include liver, eggs, legumes, garlic, meat, milk, fish, beets, lettuce, parsley, raspberries, black currants, buckwheat porridge, wheat. Despite the numerous studies carried out, the issues of distribution, early diagnosis, correction and Prevention of cobalt hypomicroelementosis have not been adequately covered [106]. Zinc is one of the irreplaceable microelements for the animal and human organism, participates in all types of metabolism, as a component of metal enzymes, hormones, plays an important role in the differentiation and stabilization of cell membranes, in the exchange of biologically active substances and many other metabolic processes [10, 12, 14].ne of the irreplaceable microelements for the animal and human organism, participates in all types of metabolism, as a component of metal enzymes, hormones, plays an important role in the differentiation and stabilization of cell membranes, in the exchange of biologically active substances and many other metabolic processes [10, 12, 14]. Selective zinc deficiency leads to thymus hypoplasia, decreased thymalin activity, and the development of immunodeficiency [12, 13]. In animals T-lymphocytes, a decrease in the amount of antibodies were recorded, phagocyte functions were suppressed. In animals T-lymphocytes, a decrease in the amount of antibodies were recorded, phagocyte functions were suppressed. The data obtained is probably explained by the fact that zinc regulate In animals T-lymphocytes, a decrease in the amount of antibodies were recorded, phagocyte functions were suppressed. The data obtained is probably explained by the fact that zinc regulates the synthesis of nucleic acids in thymus cells, the active form of thymalin and enhances the work of T-lymphocytes [16, 12]. Zinc, which forms chemical bonds with sulfhydryl groups of proteins, phosphate residues of phospholipids and carboxyl groups of sialic acids, has a membrane stabilizing effect [2, 4, 10, 14, 15]. Zinc deficiency in pregnancy can be accompanied by an increase in the frequency of preterm births, weakness in obstetric activity, atonic bleeding, anemia and the appearance of birth defects [10, 11, 14]. Zinc deficiency in pregnancy can be accompanied by Zinc deficiency in pregnancy can be accompanied by an increase in the frequency of preterm births, weakness in obstetric activity, atonic bleeding, anemia and the appearance of birth defects [10, 11, 14]. Zinc deficiency is more common in children than in adults. Zinc is part of insulin, accelerates the regeneration of the intestinal mucosa, increases the

activity of the enzymes of the brushed groove of erythrocytes, increases the amount of secretory antibodies and the intensity of cell immunity. A more rapid increase was reported in newborns who received zinc, which may be associated with an increase in insulin-like growth factor levels [17].more rapid increase was reported in newborns who received zinc, which may be associated witid increase was reported in newborns who received zinc, which may be associated with an increase in insmore rapid increase was reported in newborns who received zinc, which may be associated with an increase in insulin-like growth factor levels [17]. Zinc deficiency may be an additional cause of intestinal dysfunction in malabsorption [16]. Zinc concentration decreases in liver diseases [15], mucovissidosis [11, 14, 16], duodenal ulcers [14]. The kidneys play an important role in zinc metabolism. Hemodialysis and kidney transplantation are accompanied by an increase in zinc levels in the blood in SBE [18, 17]. There is reason to believe that targeted study of zinc deficiency will increase the chances of timely detection of Diseases, Detection of spread, improvement of diagnosis and adequate therapy.

1. Mirrakhimova M.H., Nishanbaeva N.Y., Clinical Manifestations Of Connective Tissue Dysplasia In Children With Glomerulonephritis //Journal of Pharmaceutical Negative Results/Volume 13/Special Issue 9 ¦ 2022,rr.4203-4205

2. Khalmatova Barnoturdixodjayevna.,Mirrakhimova Maktuba Khabibullayevna., Nishonboyeva Nilufar Yunusjanovna// Diagnosisand Therapy Of Pancreatic Dysfunction In Atopic Dermatitis In Children/The American Journal of Medical Sciences and Pharmaceutical Research (ISSN – 2689-1026)/ Published: March31,2021 |Pages:132-140Doi:
https://doi.org/10.37547/TAJMSPR/Volume03Issue03-19/pp

3. Nishanbayeva N.Yu., Mirraximova M.X. Bolalarda atopik dermatitda oshqozon ichak traktidagi klinik laborator o‘zgarishlarni aniqlash, tashxislash va davolash tamoyillarini takomillashtirish //«Tibbiyotda yangi kun» 6(38/1)2021 ISSN 2181-712X. EISSN 2181-2187 pp.720-726.

4. Nishonboyeva, N.Y, Mirrakhimova, M.K, Ibragimova, S.A /Digestive organs status in children with atopic dermatitis. Journal of Critical Reviews, 2020, 7(5), pp. 678–679

5. Ibragimov, S.A., Mirrakhimova, M., Nishonboyev, N.Y., Abdullaev, B.S./Comordid course of atopic dermatitis with bronchial asthma in children: Frequency, clinical and allergological characteristics. Journal of Critical Reviews, 2020, 7(17), pp. 2317–2321

6. Mirrakhimova M. Kh, Nishanbaeva N. Yu, Kasimova M. B PSYCHOSOMATIC RELATIONSHIPS IN ATOPIC DERMATITIS.// International

Journal of Education, Social Science & Humanities. FARS Publishers,Impact factor (SJIF) = 6.786//Volume-11| Issue3| 2023,pp. 734-738

7. Mirrakhimova M. Kh, Nishanbaeva N. Yu, Shamsiyeva E.R, Saydaliev A.B//Atopic Dermatitis and Mental Disorders Psychosomatic Relationships//Journal of Coastal Life Medicine. JCLMM 1/11 (2023) //pp.1153–1159

8. Камилов А.И., Махмудова Д.И., Ахмедов М.Н., Каримов У.А. Республикада болаларнинг касалланиши ва улишининг ахволи, уларнинг камайтириш чора тадбирлари тугрисида. //Педиатрия, 2012, № 2, -С. 8-12.

9. Камилов А.И., Ахмедов Д.И., Туреева Н.К. «Состояние и перспективы развития педиатрической службы в Республике Узбекистан». // Педиатрия, 2012, № 2, -С. 5-7.

10. Караулов А.В., Марциновски В.Ю., Хваталин И.В. Некоторые аспекты иммунномоделирующей терапии больных затяжной пневмонией в период реконвалисценции. //Терапевтический архив, 2016,№ 4,-С. 113-117.

11. Карлинский В.М., Вендланд И.О. Дефицит цинка у детей и подростков. //Педиатрия, 2013, № 1, -С. 63-66.

12. Карлинский В.М., Вендланд И.О. Профилактика дефицита цинка. //Вопросы охраны материнства и детства, 2017,№ 10,-С. 57-61.

13. Карманов В.К. Применение электрофорреза меди в комплексном лечении острой пневмонии у детей раннего возраста. //Вопросы курортологии, физиотерапии и лечебной физкультуре, 2016, вып. 1, -С.77-80.

14. Карманов В.К., Высоцкая Л.М. Изменение содержания меди, калия и натрия в плазме крови у детей раннего возраста больных пневмонией. // Микроэлементы в биосфере и их применение в сельском хозяйстве и медицине Сибири и Дальнего Востока, Улан-Уде, 2015, -С. 385-388.

15. Касымова Ш.К., Алимухамедов А.Б., Чупрова В.А. Использование эндоваскулярного лазерного облучения крови (ЭВЛОК) с целью иммуннокоррекции при тяжелых формах пневмонии. //Теоретическая и клиническая медицина, 2014, № 6, -С. 115.

16. Кирсанов А.И., Долгодворов А.Ф., Леонтьев В.Г., Горбачева И.А. Концентрации химических элементов в разных биологических средах человека. //Клиническая лабораторная диагностика, 2011, № 3, -С.16-19.

17. Климанская Б.Б., Шехтер А.Б. Клинико-морфологический анализ результатов эндобронхиального применения гелий-неонового лазера при лечении хронической пневмонии у детей. //Грудная хирургия, 2015, № 4, -С.59-64.

18. Климанская Е.В., Соссюра В.Х. Влияние ультрафиолетового лазерного излучения на бронхопатогенную инфекцию в эксперименте и клинике эндобронхита при хронической пневмонии. //Вопросы охраны материнства и детства, 2014, № 9, -С.14-18.

19. Коденццова В.М., Трофименко А.В., Вржесинская О.А. Использование в питании детей витамино-минеральных комплексов. // Педиатрия, 2013, № 4, -С.73-77.

20. Колб В.Г., Камышников В.С. Справочник по клинической химии. Минск. «Белорусь», 2012- С. 93-98.

21. Кончаловский М.В., Шишникова Т.В., Чотий В.Г. Применение карбоната лития в качестве лейкостимулятора при острой лучевой болезни человека. //Гематология итрансфузиология, 2019,№ 3,-С. 16-22.

22. Корочкин И.М., Капустина Г.М. О патогенетических аспектах применения низкоэнергетического гелий-неонового лазера при острой пневмонии. //Советская медицина, 2017, № 3, -С.18-22.

23. Кортев А.И., Вахрушева Т.С. Биоэлементы медь, железа, цинк как показатели тяжести течения хронической пневмонии у детей. // Микроэлементы в биосфере и их применение в сельском хозяйстве и медицине Сибири, Дальнего Востока. Улан-Уде, 2016, -С. 406-408.

24.

25. Кошелева В.Н. Лазер в лечении ран. Саратов.2015, -С.-125.

26. Крюк А.С., Красильников А.П. Изучение раневой микрофлоры и естественного иммуннитета у травмотологических больных в процессе лазеротерапии. //Ортопедия, травмотология и протезирование, 2015, № 6, -С.13-16.

27. Кулик В.И., Иванов А.В. Изменение иммунологических характеристик лимфоцитов человека под воздействием гелий-неонового лазера. В кн.: Применение лазеров в медицине. М, 2014, -С.95.

28. Курбанов Д.Д., Амонов И.И. Биологическое значение микроэлементов в регионе зобной эндемии. //Медицинский журнал Узбекистана, 2013, № 1 , -С. 104-106.

29. Кусельман А.И., Черданцева А.П. Магнито-инфракрасно-лазерная терапия у детей. //Педиатрия, 2017, № 5, -С.17-26.

30. Ленинджер А.Л. Оновы биохимии. М.: Медицина, 2015, т.1,-С. 294-299, т.3,-С. 884 -889.