DETERMINATION OF HEAVY METALS AND PESTICIDES IN THE "OREGANO AS" FOOD SUPPLEMENT AND ASSESSMENT OF ITS SAFETY

Jumanova Barno Ganiyevna
Lecturer, Fergana Institute of Public Health Medicine
E-mail: Jumanovabarno1978@gmail.com

In recent years, food supplements made from natural medicinal plants have been widely used to improve public health, support the immune system, and prevent various diseases. One such product is the "Oregano AS" food supplement, which is produced using Origanum tytthanthum (mountain oregano) and Salvia officinalis (medicinal sage) as the main raw materials.

However, any plant-based product must be safe for human health and comply with sanitary and hygienic standards. In particular, the presence of heavy metal ions, pesticides, and toxic substances can pose a serious risk to human health. Therefore, the content of heavy metals and pesticides in the "Oregano AS" food supplement was analyzed in accordance with the requirements of Sanitary Rules and Norms San QM No. 0366-19, paragraph 12.4.

During the study, the concentrations of heavy metals such as lead, arsenic, cadmium, and mercury, as well as aflatoxin B1, HCH isomers, DDT, and its metabolites were determined and compared with regulatory limits. The obtained results are presented in Table 1.

Table 1

Content of Heavy Metals and Pesticides in the "Oregano AS" Food Supplement

Indicator	Permissible limit (µg/kg)	"Oregano AS" (µg/kg)	Compliance
Lead (Pb)	0.02	0.003	Complies
Arsenic (As)	0.05	0.004	Complies
Cadmium (Cd)	0.02	0.001	Complies
Mercury (Hg)	0.005	0.000	Complies
Aflatoxin B1	0.005	Not detected	Complies
HCH isomers	0.02	Not detected	Complies
DDT and its metabolites	0.01	Not detected	Complies

As shown in the table, all analyzed indicators were significantly lower than the maximum permissible limits established by regulatory documents. In particular, the detected levels of cadmium and arsenic were minimal, indicating the absence of potential toxic effects. The absence of mercury (0 µg/kg) further confirms the high safety level of the product.

In addition, aflatoxin B1, HCH isomers, and DDT with its metabolites were either not detected or were present at levels far below the permissible limits, suggesting no adverse effects on the human body.

These results indicate that the "Oregano AS" food supplement is produced from environmentally clean raw materials and that hygienic and sanitary requirements were strictly observed during the production process.

Based on the obtained research results, the following conclusions were drawn:

1. The content of heavy metals, pesticides, and toxic substances in the "Oregano AS" food supplement is significantly below the limits specified in regulatory documents.

2. The detected levels of lead, arsenic, cadmium, and mercury do not reach harmful concentrations for the human body.

3. Aflatoxin B1, HCH isomers, DDT, and its metabolites do not exceed permissible limits, further confirming the safety of the product.

4. Based on the obtained results, the “Oregano AS” food supplement is safe for human health, complies with sanitary standards, and can be recommended for practical use.

Thus, the study results demonstrate that this product can be widely used for preventive purposes and for strengthening overall health.

REFERENCE:

1. Davlatovich, A. D., & Mishra, S. (2025). THE PATHOGENETIC SIGNIFICANCE OF SKIN BARRIER DYSFUNCTION IN ATOPIC DERMATITIS. GLOBAL TRENDS IN SCIENCE AND INNOVATION, 2(1), 233-239.

2. Xodjiakbarovna, KM (2025). Kam vaznli chaqaloqlarda metabolik moslashuv jarayonlarining patogenetik mexanizmlari. Fan va innovatsiyalardagi global tendentsiyalar , 2 (1), 276-282.

3. G’aniyevna, J. B. (2025, February). "OREGANO-AS" OZIQ-OVQAT QO’SHILMASI TARKIBIDAGI FARMAKO-TOKSIKOLOGIK XUSUSIYATLARINI ORGANISH. In International Educators Conference (pp. 208-214).

4. Jumanova, B. (2023). CHEMICAL COMPOSITION OF THE MARMARAK MEDICINAL PLANT (SALVIA OFFICINALIS) AND USE IN PEOPLE'S MEDICINE. Академические исследования в современной науке, 2(26), 158-162.

5. Jumanova, B. G., & Mamatkulova, S. A. (2023). DORIVOR SHALFEY O’SIMLIGINING KIMYOVIY TARKIBI VA XALQ TABOBATIDA QO ‘LLANILISHI. Journal of Chemistry of Goods and Traditional Medicine, 2(6), 138-145.

6. Jumanova, B. G. (2025). CLINICAL EFFECTIVENESS OF THE DIETARY SUPPLEMENT OREGANO AS IN INFLAMMATORY DISEASES OF THE ORAL CAVITY. Advances in Science and Environment, 1(12), 12-14.

7. Jumanova, B. (2023). CHEMICAL COMPOSITION OF THE MARMARAK MEDICINAL PLANT (SALVIA OFFICINALIS) AND USE IN PEOPLE'S MEDICINE. B ACADEMIC RESEARCH IN MODERN SCIENCE (Т. 2, Выпуск 26, сс. 158–162). Zenodo.

8. Ашуров, Д. Д. (2025, February). ИНВАЗИВНЫЕ МЕТОДЫ ЛЕЧЕНИЯ ВИТИЛИГО. In International Conference on Modern Science and Scientific Studies (pp. 304-307).

9. Davlatovich, A. D. (2025). CLASSIFICATION OF TATTOOS AND TATTOO REMOVAL. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(2), 431-434.

10. Ашуров, Д. Д. (2025, February). ИНВАЗИВНЫЕ МЕТОДЫ ЛЕЧЕНИЯ ВИТИЛИГО. In International Conference on Modern Science and Scientific Studies (pp. 304-307).

11. Sattievna, D. G. (2024). FARG'ONA VILOYATIDA REPRODUKTIV YOSHDAGI AYOLLARNI KONTRASEPTIV VOSITALARNI QO'LLASH USULLARI HAQIDAGI XABARDORLIK DARAJASINI O'RGANISH. Лучшие интеллектуальные исследования, 14(2), 239-243.

12. Мухидинова, Ш. Б. (2023). Гиперэндемические очаги гельминтозов и эпидемиологическая ситуатsии. ЖКМП, 3(3), 30-35.

13. Bahromovna, S. (2024, May). M. Chlamydia Caused Disease. In Proceedings of the International Scientific Conference on Multidisciplinary Studies, Moscow, Russia (Vol. 11).

14. Baxromovna, M. S. (2024). MALARIA DISEASE AND ITS ETIOLOGY, PATHOPHSIOLOGY AND TREATMENT. Miasto Przyszłości, 48, 217-22.

15. Baxromovna, M. S. (2024). INFECTIOUS DISEASES, FACTORS THAT SPREAD THEM. American Journal of Pediatric Medicine and Health Sciences (2993-2149), 2(2), 399-405.

16. Мухидинова, Ш. Б. (2024). СОВЕРШЕНСТВОВАНИЕ ОРГАНИЗАЦИИ СЕСТРИНСКОГО УХОДА ЗА ПОСТИНСУЛЬТНЫМИ БОЛЬНЫМИ В УСЛОВИЯХ СТАЦИОНАРА. International Journal of Education, Social Science & Humanities, 12(5), 668-672.

17. Abduganieva, A. Y. Etiological factor of Acute Intestinal Infections in different age groups.(2023). World Bulletin of Public Health, 29, 38-40.

18. Имомова, М. Ё., Абдуганиев, Ё. Г., Хошимова, А. Ё., & Турдибоев, А. Х. (2014). ОПРЕДЕЛЕНИЕ КОЛИЧЕСТВА ХОЛЕСТЕРИНА В СОСТАВЕ ПИЩЕВЫХ ПРОДУКТОВ. In Актуальные проблемы и достижения в медицине (pp. 51-52).

19. Rashidovna, A. M., & Usmanova, D. D. Vascular dementia: neuroimaging aspects. Биомедицина ва амалиёт журнали, 200.

20. Усманова, Д. Д., Мурадимова, А. Р., & Ашуралиев, И. М. (2019). Нейротрофические белки крови и их корреляции с факторами сосудистого риска у пациентов с дисциркуляторной энцефалопатией, осложненной сосудистой деменцией. Территория науки, (5), 12-16.

21. Ахмедова, Ф. Ш., Ахмедова, Е. А., Мурадимова, А. Р., & Абдужаппарова, Н. Э. (2019). Нарушения когнитивных функций при посттрав-матической энцефалопатии. In Инновации в медицине (pp. 166-173).

22. Shuxratjon o‘g‘li, S. E. (2025, January). INCIDENCE AND ETIOLOGY OF HYPOSPADIAS. In International Conference on Multidisciplinary Sciences and Educational Practices (pp. 99-104).

23. Shukhratjonovich, S. E. (2023). TREATMENT OF PATIENTS WITH CHRONIC RECURRENT CYSTITIS WITH A DRUG BASED ON

BACTERIOPHAGES. Best Journal of Innovation in Science, Research and Development, 2(10), 541-544.

24. Mukhtarjanovna, I. G. (2023). Developing the Principles of Studying and Treatment of Vaginal Dysbiosis During Pregnancy. Texas Journal of Medical Science, 16, 67-68.

25. Mukhtarzhanovna, I. G. (2024, May). Development of Principles of Study and Treatment of Vaginal Dysbiosis During Pregnancy. In International Congress on Biological, Physical And Chemical Studies (ITALY) (pp. 112-115).

26. Sherali o‘g‘li, A. B., & Turdali o‘g, Y. L. A. (2025). CLINICAL COURSE AND LABORATORY DIAGNOSIS OF FUNGAL SKIN DISEASES. GLOBAL TRENDS IN SCIENCE AND INNOVATION, 2(1), 226-232.