

**ANALYSIS OF SCIENTIFIC RESEARCH BY SCIENTISTS OF WESTERN COUNTRIES ON
THE STUDY OF THE PHYSIOLOGICAL EFFECTS OF HEAVY METALS ON PLANTS,
ANIMALS AND HUMAN ORGANISMS**

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ABSTRACT: This study presents a review of the literature devoted to the study of the mechanisms of heavy metals' effects on plant, human and animal organisms. Nowadays, along with the development of development, there are many factors that threaten the life of living organisms in nature. In recent years, as a result of industrial development, the environment is polluted with various harmful substances.

KEYWORDS: Heavy metals, physiology, physiological effects, vanadium, chromium.

INTRODUCTION

Due to the wide range of effects of heavy metals, it has been thoroughly studied that they accumulate in various organs of organisms and cause serious changes . The literature on the mechanism of physiological effects of heavy metals was studied and appropriate conclusions were drawn. In this field, not only the works of Uzbek scientists, but also the works of some Western scientists from around the world were studied. The impact of heavy metals on living organisms causes serious changes in organisms. The role of scientists from all over the world is also important in their study.

The harmful effects of heavy metals have penetrated into all aspects of our lives. In particular, textile and steel industry workers are often exposed to Cr (IV), which is harmful to human health. Smokers are also more likely to be poisoned by Cr. Chromium (VI) can cause many health effects. Chromium in leather products can cause an allergic skin rash. Exposure to Cr can cause inflammation and bleeding from the nose. Other health problems caused by Cr (VI): weakened immunity, skin diseases, inflammation of the gastrointestinal mucosa, nephritis, lung cancer, liver and kidney damage, necrosis, human death. (Karadede et al., 2004) Humans can be exposed to Pb through food and inhalation and then accumulate in muscles, bones, blood and fat. Lead has

been reported to affect neonates and young children even at low levels (Maccoy et al., 1995). Pb can cause serious damage to the liver, kidneys, brain, nerves and other organs, reproductive disorders, osteoporosis (brittle bone disease), heart disease, high blood pressure, especially in men, anemia, memory problems, behavioral disorders, mental retardation known. Pb causes nerve and brain damage in fetuses and young children, resulting in reduced mental function. (Elder and Collins 1991; Healey 2009). Copper, which is considered a heavy metal, has also been found to have a high level of harmfulness. High doses of copper to humans can cause oxidative damage to the brain, causing Menstrual Syndrome, a fatal disease (Jyothi 2020). Wilson's disease can be caused by Cu accumulating in the brain and eyes as a Kayaer-Fleischer ring (Arthri 2006; Sakar 2009). Other adverse effects of excessive Cu intake include gastrointestinal disorders, kidney damage, and even death. (US Dept. 2004; Engwa 2019 ; Jyothi 2020)

In Bulgaria, scientists Leontopoulos, St., N. Gougoulas, D. Kantas, L. Roca And Ch. Makridis, (2015) studied the composition of heavy metals consumed through feed in pigs and their accumulation in organs. The purpose of the study was to assess the risk to public health. Analysis of the samples was performed using atomic absorption spectroscopy. The results showed that higher daily intakes of Cu, Zn, Cr, Pb, and Cd provided 49%, 76%, 12%, 7%, and 5%, respectively, in the feed samples compared to the maximum allowed (EFSA). showed. Studies have shown that the concentration of heavy metals in the internal organs of animals raised in industrial areas is higher than that of animals raised in rural areas. (Abou-Arab, 2001) Blood, milk, and animal waste in contaminated areas where dairy cows were raised in Nigeria had significantly increased Pb concentrations compared to cows raised in unpolluted areas of the country (Ogundiran et al., 2012). Finally, studies on the distribution of heavy metals in liver, kidney, heart, pancreas and muscle tissues of various animals from Kohat Market Pakistan showed higher concentration in liver and kidney and lower concentration in muscle tissue. Heavy metal pollution in rivers and lakes poses a serious threat to fisheries and public water supplies. (Auta et al., 2005; Agbugui and Deekae, 2013; Mensor and Said, 2018). Heavy metals are found in the water environment as a result of industrial, agricultural waste and by-products, household waste and heavy metal contamination of products. When heavy metals accumulate at high levels in an environment or void, such as air, water, and soil, such an environment becomes toxic and then accumulates in the environment because they do not degrade. The gradual, persistent and increasing accumulation of these heavy, toxic metals can have devastating effects on life and aquatic biomes, fish life, diversity and conservation. (Mensor and Said, 2018; Agbugui et al., 2019). Living organisms, especially humans, are contaminated by contact with water systems contaminated with organic and inorganic heavy metals and by consuming fish and other aquatic animals contaminated from such environments (Baharom and Ishaq, 2015).

As modern development progresses, the number of man-made factors that are harmful to organisms is increasing year by year. Among them, heavy metals also rank high in relevance. We can see that the study of the mechanisms by which heavy metals affect the physiological states of living organisms is more important than ever according to the conclusion of the studied literature.

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