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Heavy Metal Toxicity in Fishes and Involvement of Public Health Risks from its Exposure

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Abstract

Heavy metals have the property of gradual accumulation over prolonged period of time leading to health problems due to poisoning and toxicity. They lead to severe health problems. Except selenium which acts as an antioxidant in our body, no other heavy metal serve as an important biological function in the human body.

Key-Words: Heavy metal, Fish, Toxicity

Introduction

Heavy metals possess high density and toxicity towards living beings. Heavy metals like arsenic, chromium, lead and mercury are point popular and relevant. Heavy metals constitute the crust of the earth which resists degradation. Human get inflicted with heavy metals through the agency of food, water and atmosphere. Mercury poisoning by eating fishes is a prominent cause for public health hazard (Ganguly, 2013).

Mercury toxicity

According to the 2001 study by the National Academy of Sciences, it was reported that in the United States nearly 60,000 children get affected by mercury toxicity through various agencies of contact. In 2002-2003 reports of the U.S. Food and Drug Administration (FDA), it was reported that fishes like shark, tuna, swordfish etc. get maximum exposed to mercury through environment. Mercury generally does not pose its deleterious effect alone. It combines with carbon to form organic compounds, like methylmercury. It is formed in water and soil as per reports of while diets should include fish as part of a nutritional regimen, this protein source rich in omega-3 fatty acids also contains traces of mercury, as put forth by the Environmental Protection Agency. Mercury, a metal that exhibits several forms, combines with carbon to form organic compounds. The most familiar one is methylmercury, which is created by microorganisms found in soil and water as per reports of the *Agency for Toxic Substances and Disease Registry*. Methylmercury generally accumulates in the fish muscles on over exposure.

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Fish serves as an important and rich source of easily digestible protein supplement to our body. Also fish oil serves as an important source of omega-3 fatty acids also contains traces of mercury, as reported by the Environmental Protection Agency (Ganguly, 2013).

Toxicity due to chromium exposure

Chromium is another heavy metal which precipitates in aquatic animals and organisms. Exposure to chromium to human causes the lesions of irritation and ulceration on skin and long-term exposure causes the damage to nervous tissue and liver.

Public health risks from consumption

The effect of consumption of mercury toxicity is immense on human health. It primarily affects the kidneys and brain of growing fetus. Poisoning due to mercury can cause injury not only to the brain and kidneys but also to a growing fetus. The *Agency for Toxic Substances and Disease Registry* has reported the toxic effect of mercury on primarily the human nervous system and that of growing fetus in particular. Contact with the metal causes difficulties with memory and distortions in hearing and vision including tremors and irritability.

As per reports of EPA and FDA, the toxicity from heavy metals due to fish consumption According to the EPA, the dangers of mercury poisoning from eating fish are not a major concern. The risk depends on the amount of fish intake coupled with levels of mercury in the fish. EPA and FDA recommends pregnant and nursing mothers to avoid the consumption of such type of infected fishes and are recommended for intake of fish low in mercury content (Ganguly, 2013).

References

Ganguly, S. 2013. A Handbook on Basic and Clinical Toxicology of Livestock, Birds and Fishes. Research India Publications. ISBN 978-81-924218-7-2.

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