

The effects of water pollution on heavy metal accumulation in fish liver Pomadasys KaakanAli Reza Feizbakhsh¹, Azam saedi^{2*}¹ Chemistry Group, Faculty of Science, Islamic Azad University (Central Tehran Branch), P.O.Box,1467614599, Tehran, Iran² Chemistry Group, Faculty of Marine Science and Technology, Islamic Azad University (North Tehran Branch), P.O.Box, 1987973133, Tehran, IranAzam.Saedi@Yahoo.Com

Abstract: In this investigated the concentration of the heavy metals such as lead, mercury, cadmium, nickel and arsenic in the liver tissue of fish Pomadasys Kaakan caught from the Persian Gulf were studied. Determine the concentrations of heavy metals in liver of fish samples were prepared by atomic absorption model (varian vists mpx) was: 1. As = 0.05(ppm), 2. Pd = 0.22(ppm), 3. Cd = 0.60(ppm), 4. Hg = 0.05(ppm) Accumulation of heavy metals, lead and nickel exceeded the standard for human consumption was determined that the cause can be attributed to environmental pollution and type of feeding fish. One of the most fundamental difficulties is accumulated heavy metals in the body which cannot metabolize them. The heavy metals in the some part of body such as in other tissues fat, muscle and bones joints and may accumulate the same conditions which have caused numerous complications in the body. Heavy metal salts and minerals as well as other alternatives are needed in the body which is replaced with zinc and cadmium in food. Also, taking the property of accumulation of heavy metals in plants and enter the food chain, they will have doubled their risks. The growing and extended industry and entered the chemicals in water, soil and air, and contaminated the environment is more likely to encounter human risks.

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Introduction

Persian Gulf habitat for many fish is valuable, however highway passing through the world's oil. Oil and industrial pollution in tropical ponds has been proved. Heavy metals accumulate in the body and its position in the aquatic food chain to the top of the pyramid. Every year, approximately 2/1 million barrels of oil equivalent to 160 thousand tons in the Persian Gulf and Oman Seahave been entered. Study materials and contaminants accumulate in fish tissue that is taken for nourishment and in the northern and southern regions of the country are located near the sea. Among the basic and essential food diet is the purpose of this project is in the context of aquatic foods in the region around the Sea of Oman and Persian Gulf are scattered about an accurate assessment of data. The results are presented below: [1],[2],[3],[6],[10],[12]

The experimental details**Sampling and sample storage**

Afterwards using the standard method described in the book (carrying a plastic bag of ice zinc) were transported to the laboratory and tested at temperatures up to - 20 ° C was maintained.

Topreparefresh four fish caught from this land off our different sizes were produced and porch ascedant until test in gat 20-° Cwasmaintained.

Fish dissection

Biometric fish in laboratory bio-metric and scales has done by the boards face first autopsy from the anus to cut the fish's gills, liver and gallbladder were seen around. Liver to the gallbladder by as surgical blade(scalpel) has separated and weighing container had previously been weighed.Digital scale weighing again container was then weighed.02/11 g live obtained totally.

Sample preparation for the determination of heavy metals

There search is solid sample in to the furnace cleaned by heat in gat 400 °C burning of coal obtained by 6cc Hydrochloric acid and 10cc nitric acid, and some of distilled water added then filtered to the solid discarded and the liquid to determine concentrations of Pb, Hg, Cd, As atomic absorption has given the following results were obtained.[5]



Fig1. Furnace



Fig 2. Liver converted to coal

Conclusion

To determine the four elements in the liver and muscle of fish, atomic absorption spectrometry was used. The results showed that there was an element cadmium which was higher than the permissible limit. Lead is a highly toxic metal that with gradual accumulation of this substance in the body quietly during this procedure, it will cause poisoning symptoms.

Most of the serious pathologies of lead are in children under 6 years and under 3 years. In children, lead poisoning can cause stunting of growth. Brain damage and loss of IQ in children has been observed. Excess lead has entered and stored in different organs in the body, causing damage and dysfunction precipitated them. Kidney damage, hearing loss and permanent damage to the nerve and brain, and all are created the same way. In adults, lead can cause high blood pressure, digestive problems, nerve damage as the same effect as the kidney. High concentrations of lead in the blood and deposit in the muscles can cause pain in the joints. Lead also damages the central nervous system which has caused a variety of sleep disorders.

Cadmium

Cadmium is a highly toxic metal that was the cause of death, serious illness, disease, rheumatoid arthritis or painful skeletal deformities in humans. The main toxic effects of cadmium on the lungs, kidneys and bone have a like. Cadmium-resistant bacteria and viruses can reduce. Cadmium may cause increased bone fragility and fracture risk in mineralized skeletons. Acute toxicity of cadmium may cause the death of animals, birds and fish can cause even poisoning. The element arsenic is a natural material that is both organic and inorganic. The maximum allowable concentration of arsenic in drinking water is 0.05 mg L^{-1} . Inorganic arsenic in water, soil and bedrock is found in the body is toxic bonds. Arsenic and their compounds are used in industry and in the manufacture of glass, wood, insecticides, herbicides, electronic components and alloys. Arsenic inhalation of food, water, soil and skin is transmitted. Arsenic can cause skin cancer and lung and its salts are absorbed in the stomach and absorption through the skin and lungs are the same.

Conducted a comprehensive review of all sources of pollution measurement Persian Gulf

Research conducted on species that are feeding people to the heavy metals

Research on human population living in the area of metals measured in different body tissues such as blood, hair, and skin or breast milk

Research on human populations living in the area of metals measured in different body tissues such as blood, hair, skin or breast milk of nursing mothers and the aged, and genus

Short-term studies continue to monitor the area within a specified time,

A waste water treatment plant for municipal and industrial waste waters

Measurement of heavy metals in rivers leading to the Gulf Standards for the use of heavy metals in aquatic. Because of different species of fish, the fish are worth a lot of their annual harvest by fishermen should have thought rising and propagation of fish for future generations also be indirect.

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