STUDY OF BIOCONCENTRATION AND VARIATIONS IN HEMATOLOGICAL PARAMETERS IN TILAPIA *(OREOCHROMIS NILOTICUS)* FED WITH DIET CONTAMINATED WITH METHYLMERCURY

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Aquaculture is a production system that is experiencing one of the fastest growths worldwide, specially in developing countries. Brazil contributes with 10% of the production of Latin America. The culture of tilapia *(Oreochromis niloticus)* is developing quickly and is one of the most important among the aquaculture activities in tropical and sub-tropical countries. Mercury contamination in fish can have several consequences, such as: inhibition of metabolic processes, low fecundity, decrease in survival rate and alterations in cell defence capacity. Fish can incorporate mercury by direct contact with contaminated water, by branchial breathing and by absorption through the digestive tract and in most aquatic organisms methylmercury is accumulated more efficiently than inorganic mercury. In the present paper, the bioconcentration of methylmercury in organs, as well the variations in haematological parameters were studied in tilapia fish *(Oreochromis niloticus)* fed with diet contaminated with methylmercury. The diets were prepared by spraying the fish feed with methylmercury chloride solutions of two different concentrations. Two groups of fish were fed with contaminated diets (Hg concentration 1 = 1.03 ± 0.15 μg g^{-1} and Hg concentration 2 = 8.27 ± 1.25 μg g^{-1}) and one group was fed with diet not contaminated with methylmercury (control group). The experiment was conducted for a period of forty two days, and periodically the haematological parameters of the fish were analyzed, as well as the hepato and splenossomatic relations and the bioaccumulation of Hg in muscle, liver, kidney, spleen and brain. Methylmercury was determined as Hg by CV AAS. Methylmercury was bioaccumulated mainly in the kidney and liver and the accumulation rank was: liver > kidney > brain > muscle > spleen. As to the haematological parameters, it was found for instance that the leucocytes and lymphocytes presented a significant mean decrease after forty two days of experiment, for both concentrations of methylmercury, as compared to controls.

ENVIRONMENTAL SILVER POPULATION EXPOSURE, OVEREXPOSURE, AND TOXICITY

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OBJECTIVE: Silver is a non-essential member of the body elementome that may induce human poisoning in high doses, i.e., the medical disease condition known as *«argyrosis»*. Silver has strong antibacterial properties and has been used in many home and medical appliances now available at the market. However, and except for the occupational setting, the data on environmental population silver exposure and possible health effects of overexposure and toxicity are scarce and inconclusive. The aim of this study was to investigate the level of hair silver in a random segment of the occupationally non-exposed population. METHODS: The study was conducted by strict adherence to the Declaration of Helsinki principles on human subject research, and approved by the appropriate ethic committee. Hair was collected from 87 men and 126 women (n = 213), and analyzed for its Ag content by the ICP-MS at the CBM, Moscow. RESULTS: The observed median concentration of silver in the hair was 0.065 μg/g Ag. Considering the pattern of frequency distribution of silver in the hair, tentative limits were proposed for the normal silver in the hair of up to 0.650 μg/g Ag, an increased silver exposure to be from 0.650 to 1.900 μg/g Ag, and a silver toxicity due to internal contamination following oral ingestion if its concentration in the hair exceeded 1.900 μg/g Ag. CONCLUSION: When assessing the body silver status after oral ingestion hair has an advantage over the blood, since hair accumulates grossly more silver than blood due to its high sulphur content and unidirectional growth what makes it a «memory tissue», whereas the silver in the blood dynamically equilibrate between and within the different biochemical compartments of the body all the time.