CONTAMINATION OF MARINE ORGANISMS (MOLLUSKS AND FISH) IN TARANTO GULF IN RELATION TO MERCURY SPECIATION IN SEDIMENTS

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Contamination of marine organisms with toxic chemicals, such as mercury and its compounds, has been intensively studied in recent years, due to the fact that these contaminants are persistent, toxic, tend to bioaccumulate, and pose human and ecosystem risks. In sediments, inorganic mercury may also be converted by bacterial activity into methylmercury, the most toxic chemical species which may cause the permanent harm to the central nervous system, such as behavioural disorders and deficiencies in immune system and development. The aim of this work was to determine the concentration of total mercury (THg) and methylmercury (Me-Hg) in the sediments and in different edible tissues of bivalve molluscs (Mytilus galloprovincialis, Chlamys varia), gastropod molluscs (Hexaplex trunculus) and fish (Symphodus melops) collected at 5 sites from Taranto coastal environment, in order to investigate contamination level and public health risks associated with consuming fish and seafood harvested from this area. Moreover the goal of this study was also to estimate the weekly intake and compare it with the provisional tolerable weekly intake (PTWI) recommended by the European Food Safety Authority (EFSA, 2004). Total mercury (THg) and methylmercury (Me-Hg) concentrations in sediments ranged from 0.036 to 7.730 mg/Kg d.w. (mean: 2.777 mg/Kg d.w.) and from 1 to 40 µg/Kg d.w. (mean: 11 µg/Kg d.w.) respectively. In mollusks THg concentrations ranged from not detectable to 1870 µg/kg d.w. while in fish from 324 to 1740 µg/kg d.w. Me-Hg, concentrations in fish ranged from 190 to 1040 µg/kg d.w. and from not detectable to 1321 µg/kg d.w. in mollusks. THg in examined marine organisms exceeded the maximum level fixed by the EC Decision (0.5 mg/Kg w.w.) solely in gastropod mollusks Hexaplex t.. The estimated weekly intake for THg and Me-Hg was in many cases over the PTWI established by EFSA for all edible species, and in less measure for Mytilus g. especially in children. In this perspective, it is imperative that continuous monitoring of mercury and methylmercury levels in all foods be done, with crucial attention to seafood, considered a primary vector of these substances for human.

EFSA (European and Food Safety Authority). 2004. Opinion of the Scientific Panel on Contaminants in the Food Chain on a request from the Commission related to mercury and methylmercury in food (Request N° EFSA-Q-2003-030) (adopted on 24 February 2004). The EFSA J. 34, 1-14.

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