

Evaluation of total mercury content in fish and seafood available in Portuguese market

Santiago, S.; Nascimento, A. C.; Santos, M.

Unidade de Referência, Departamento de Alimentação e Nutrição, Instituto Nacional de Saúde Doutor Ricardo Jorge, I.P., 1649-016, Portugal

susana.santiago@insa.min-saude.pt

Keywords: mercury, fish, seafood, food safety, Portugal

In Portugal, there is a tradition of high consumption of fish and seafood, higher than in the European Union (EU) countries, and above both EU and world averages. Although fish and seafood are important sources of high biological value proteins, omega 3 fatty acids and essential minerals, it can contain environmental contaminants, such as mercury compounds, which undergo bioaccumulation in the aquatic food chain. Long-lived predatory fish species, such as tuna or swordfish, are an important human exposure source.

Methylmercury, the most toxic mercury form, mainly targets the central nervous system. The most susceptible population to the toxic effects of methylmercury are pregnant women's and children and the prenatal period represents a period of greatest vulnerability regarding neurodevelopmental effects on the fetus.

However, due to the fact that it is not possible to eliminate mercury from environment or fish, and that fish remains an important food in the Portuguese diet, recommendations for fish consumption for Portuguese population were prepared.

The aim of this research was to determine mercury contamination in fish and seafood available in Portuguese markets.

For this study, a total of 24 different species of fish and fishery and aquaculture products, representative of Portuguese consumption, were selected and acquired on the market during 2014 and 2015. Total mercury (THg) content was determined in the samples by thermal decomposition and amalgamation atomic absorption spectrophotometry (TDA/AAS), in compliance with ISO/IEC 17025.

All the analyzed samples have revealed THg levels above the limit of quantification of the method (LoQ = 1.1 µg/kg), but within the legislated limit. The values ranged between 4.2 µg/Kg (catfish) and 574 µg/Kg (scabbard fish).

These results provide information regarding analytical data of chemical substances of interest and are a contribution to food risk assessment. It also reinforces the importance of disseminating the recommendations for fish consumption for the Portuguese population as a risk communication strategy, in order to either protect susceptible populations from exposure to this chemical, and simultaneously promoting the important health benefits associated with fish consumption.

topic: 1. Occurrence of chemical contaminants in food products