

Mercury contamination of sea bream reared in Algerian marine farming fish located in Bejaia and Chlef. Human health risk assessment due to their consumption

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Fish farming is a growing industrial sector in Algeria, making a significant contribution to the country's food security. It is a valuable source of protein. However, farmed fish can be contaminated with toxic element such as mercury (Hg), and be the cause of consumer poisoning. This study was carried out to assess the Hg contamination of sea bream (*Sparus aurata*) raised in fish farms located in the wilayas of Béjaia and Chlef. An assessment of the health risks incurred by consumers of this fish was also carried out.

34 and 24 sea bream samples were collected over an 8 month period (March-October 2021) from the Béjaia and Chlef fish farms respectively (referring to European Regulation n°. 333/2007/EC and European Directive n°.96/23/EC). Analysis were carried out using an accredited method based on inductively coupled plasma mass spectrometry (ICP-MS). Human health risk was assessed using the estimated weekly intake (EWI) and hazard quotient (THQ) as recommended by the United State Environmental Protection Agency (USEPA).

The results (mg/kg wet weight) showed that sea bream reared in Chlef were slightly more contaminated (0.053 ± 0.023 mg/kg) than sea bream reared in Béjaia (0.050 ± 0.010 mg/kg), (no significant difference between the two farms, $p > 0.05$). Nevertheless, levels were well below national and European regulatory limits (0.5mg/kg). Estimated $EWI_{(Hg)}$ values ($\mu\text{g}/\text{kg}/\text{week}$) linked to consumption of this fish (0.06) are below the tolerable weekly intake (5.0) set by the USEPA. Similarly, the estimated $THQ_{(Hg)}$ (0.05) is below the critical threshold (1.0). The results indicate that consumption of sea bream from these two farms is unlikely to have any adverse effects on human health in terms of Hg poisoning.

Keywords: Seabream, Mercury, Contamination, ICP-MS, THQ.

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