

IS FISH THE FOODCHAIN END POINT FOR HUMAN METHYLMERCURY CONTAMINATION?

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The special characteristics of monomethylmercury (MMHg) bioaccumulation in fish and human tissues make hair mercury (HHg) a marker of potential harm due to fish consumption. However, fish and seafood are eaten because they are traditionally recognized as good foods and are recommended because of their proven health benefits. Notwithstanding that MMHg occurs naturally, until the tragic accident of Minamata, it was unthinkable to imply harm due to Hg contamination caused by fish consumption.

Hansen and Gilman (1) skillfully presented the incommensurable concept of the chance of harm caused by fish-Hg exposure against the proven benefit of consuming fish.

Assumptions that benefits of fish consumption may be counteracted by the negative effects of fish-Hg need consideration. Due to its high quality protein, fishmeal is extensively used as a feed ingredient for poultry, pigs, beef and farmed fish, in order to promote rapid animal growth and product yields (eggs, milk, meat and farmed fish), and to increase the levels of essential fatty acids in derived products. The use of fishmeal and oil in the diets of

food-producing animals and farmed fish has increased significantly over the last 50 years. As such, food from animals raised on fishmeal has impacted on the exposure of non fish-eaters to environmental pollutants (2). Fishmeal-fed animals can accumulate MMHg in protein matrices and bioconcentrate organohalogen pollutants (OHP) in the fat component of derived foods (3).

Markers of fish consumption (especially HHg) do not include the non-fish contribution of foods derived from farmed animals fed fish by-products. The development of public health measures to address the potential risks of fish-borne environmental contaminants has to consider farm animals raised on fish by-products. The extensive use of fishmeal as a source of animal protein impacted Hg exposure in non-fish eaters (4) and HOP intakes through milk and meat (5). Therefore, identifying critical issues to address public health approaches for dealing with human exposure to MMHg needs to go beyond fish consumption. Policies to decrease exposure to fish-derived MMHg and OHP must consider farming practices that use fish by-products.

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