

The Assessment of the concentrations of heavy metals in Carps of hydrothermal fish farming and the hazard of their consumption

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Abstract

The present study was conducted to assess the hazards posed to consumers by measuring the concentrations of mercury (Hg), zinc (Zn), lead (Pb), and cadmium (Cd) in muscle tissue of common carp (*Cyprinus Carpio*), bighead carp (*Hypophthalmichthys nobilis*), silver carp (*Hypophthalmichthys molitrix*) and grass carp (*Ctenopharyngodon idella*) on Sari farmed carp fish pools. To study the concentration of metals in fish, 144 fish samples were collected from hydrothermal fish pools on Sari in 2020. The highest concentration of metal in the muscle of studied fish belonged to zinc in grass carp (7.45 mg/kg dry weight) and the lowest concentration belonged to mercury in common carp (0.01 mg/kg dry weight). Concentrations of heavy metals in common carp, bighead carp, silver carp and grass carp in Sari hydrothermal fish ponds are less than the limits declared by the US Environmental Protection Agency (USEPA) and the UK Department of Agriculture, Fisheries and Food (MAFF). The order of metals in studying fish was as follows: Zn> Pb> Cd> Hg. The target hazard quotient (THQ) for mercury, lead, zinc, and cadmium was less than one. The total hazard index (HI) was 0.36 for common carp, silver carp, grass carp, and 0.42 for bighead carp which indicates there is no potential risk to consumers.

Keywords: Heavy metals, Fish, Farmed carp, Target hazard quotient (THQ), Hazard index (HI), Sari.