Title : Comparative Heavy Metal Distribution in Fish Organs: Insights from the High Contamination Zones of Northern Thailand, Salween River

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ABSTRACT

Heavy metal accumulation remain a problem in natural water source. The majority of heavy metals in the Salween River's contamination is caused by gold mining upstream in Shan State. These toxic substances are washed down to Salween River, causing transboundary impacts. High contamination zone in Salween River where is an important natural border river between Mae Hong Son province and Myanmar affects to water source and aquatic animals, especially within fish. This study leads to the detection of the accumulation and distribution of heavy metal in each fish organs. The purpose is to make a compare which organs of each fish species in the Salween River shows the highest distribution of heavy metals and identify which type of heavy metal is the most accumulated in these fish. The experiment was conducted using Cyprinidae, that include many species of freshwater fish found in Thailand (*Barbonymus gonionitus* (Barb); *Neolissochilus stracheyi* (Blue Mahseer fish); *Puntioplites proctozysron* (Smith's barb) were collected from Salween River to analyze the level of heavy metals in fish. Involves comparing the distribution of heavy metals in the head, body, belly, and fish gut. By two grams of different fish organs use Nitric acid 8 ml and Hydrogen peroxide 2 ml for Microwave Digestion (speed wave XPERT) process. Heavy metals detection by PlasmaQuant 9100 Elite (ICP-OES) by adjusting the sample in volume 25 ml with Deionized Water.

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Seven of heavy metals were analyzed: Arsenic (As); Cadmium (Cd); Chromium (Cr); Copper (Cu); Mercury (Hg); Manganese (Mn); and Lead (Pb). In different fish species were found concentration of As, Cd, Cr, Cu, Hg, Mn, and Pb in this study: most As, Cd, Mn, and Pb found in fish guts; Cr found in belly; Hg found in fish body. Hence, this study aims to understand how these heavy metals in the Salween River affect aquatic animals that living in water source and is another environmental issue that should be aware of. Because this leads to high risk for ecosystem and people who use the Salween River or fish consumers. To show that fish in target area where they are consumed are safe for consumption and not exceeding the standard limit in fish; food safety (Notification of Ministry of Public Health No.414; Codex). Increase their awareness of dangerous toxins in aquatic life.

Keywords: Freshwater Fish; Salween River; Heavy Metal Distribution; Toxicity; Comparison of heavy metals accumulation in Fish organs; Microwave Digestion; PlasmaQuant 9100 Elite (ICP-OES)

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