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Metals in fish from Sri Lankan coastal lagoons and human health risk

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Fish products represent a major dietary animal protein source in Sri Lanka. Some of these products are fished in the coastal lagoons. Ecological and human risk assessments are needed because of the poor water quality. In this study, metal concentrations were measured in some fish species taken from three Sri Lankan coastal lagoons, i.e. Negombo, Bolgoda and Rekawa, and sold in local markets. While Negombo and Bolgoda lagoons are close to industrial areas, Rekawa lagoon mostly receives runoff from agricultural lands. Fish were sampled during dry, inter-monsoon and wet seasons in order to determine the year-round patterns. Two essential nutrients (Cu and Zn) and two toxic metals (Cd and Pb) were measured in fish muscle and liver from eight fish species (*Mugil kelaartii*, *Pseudarius jella*, *Nematolosa nasus*, *Glossogobius giuris*, *Leiognathus spp.*, *Etroplus suratensis*, *Oreochromis mossambicus* and *Gerres setifer*), all of which are highly consumed in Sri Lanka. A significant difference between metal concentrations in lagoon fish was noted in most cases in association with industrial contamination. The highest metal concentrations were recorded in a benthic feeding fish species, i.e. *Pseudarius jella*. A preliminary human risk assessment was performed while taking local customs and the highest metal concentrations in each lagoon into account. Daily metal intakes were lower than WHO safety levels. Note, nevertheless, that the lead concentration in a fish ration derived from Bolgoda lagoon corresponded to half of the WHO safety level.

Keywords: metals; fish; Sri Lanka; *Pseudarius jella*; risk assessment.