

SUMMARY OF UGC MINOR RESEARCH PROJECT ENTITLED

“INVESTIGATION OF TRACE METAL CONTAMINATION IN FISHES OF THE COASTAL WATERS OF COCHIN-SOUTHWEST COAST OF INDIA”

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SUMMARY: The study focused on the assessment of trace metal contamination in marine fishes to be used as biomonitors for trace metal pollution. Trace metal concentrations [iron (Fe), cobalt (Co), nickel (Ni), copper (Cu), zinc (Zn), cadmium (Cd), and lead (Pb)] in the muscles, gills, and livers of the fish *Sardinella longiceps*, *Rastrelliger kanagurta*, *Lates calcarifer*, *Cyanoglossus macrostomus*, *Caranx melampygus*, and *Nemipterus japonicus*, collected from the coastal waters of Cochin, southwest coast of India were studied during the monsoon (July 2015), post-monsoon (December 2015) and pre-monsoon periods (March 2016). The concentrations of metals in fish showed varying degrees of bioaccumulation which were species-specific and tissue-specific. Metal concentrations in organs (muscles, gills, and livers), vary markedly among the six species of fishes. Concentrations in tissues of the fish generally followed the order liver > gill > muscle. The concentration ranges of Fe, Co, Ni, Cu, Zn, Cd, and Pb were higher during the pre-monsoon when compared to the post-monsoon or monsoon. High metal accumulation and its variability noted in the muscle, gill, and liver of various fishes suggested the importance of fishes as biomonitors of metal pollution. Among, the demersal species *Caranx Melampygus*, showed higher concentrations of Fe, Ni, and Cu whereas *Nemipterus Japonicus* showed a higher concentration of Cd. Similarly, the pelagic species *Lates Calcarifer*, showed higher concentrations of Co, Zn, and Pb. The data show accumulation of trace metals in fishes to a considerable extent and relatively more than previous studies and that reported from other regions in the southwest and northwest coast of India. The enhanced concentrations of trace metals in the organs of pelagic and demersal fishes from the Cochin coastal waters are due to an increased bioavailable metal supply from the anthropogenic sources on land that are discharged through rivers. Hence, biomonitoring studies should be conducted on a regular basis, as the fish may bioaccumulate metal levels above thresholds for human consumption, in view of the increased anthropogenic impacts on the coastal waters of Cochin.

NUMBER OF PUBLICATIONS FROM THE PROJECT: (3 No.s)

1. **Rejomon George**, Martin G.D., & Biju, A. (2018). Bio-accumulation of trace metals in fish from the coastal waters of Cochin (southwest coast of India). *Research Journal of Science & IT Management*, Volume 7, No. 6, Pages 15-20.
2. **Rejomon George**, Martin, G.D., Biju, A., & Gerson, V.J. (2018). Seasonal variations of environmental characteristics in the coastal waters of Cochin (on the southwest coast of India). *International Journal of Scientific Research and Review*, Volume 7, Issue 3, Pages 100-107.
3. **Rejomon George**, Martin, G.D., Biju, A., & Gerson, V.J. (2018). Hydro Chemical Characteristics and Biological Response of the Cochin Coastal Waters-Southwest Coast of India. *Journal of Earth and Environmental Sciences*, Volume 1, Issue 1, Pages 1-10.