

TOXIC EFFECTS OF CERTAIN HEAVY METALS ON THE INDIAN MARINE
CRAB SCYLLA SERRATA.

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A B S T R A C T

Relatively little work has been done to determine the effects of heavy metals on marine crustaceans and such information on crustaceans from Indian waters is either fragmentary or lacking. Hence, the present study was undertaken to evaluate the effects of certain heavy metals like Hg, Cd, Se, As and Pb on Scylla serrata, the ~~an~~ commonest edible Indian marine crab.

The following metal compounds (mercuric chloride, phenyl mercuric acetate, cadmium chloride, selenium dioxide, arsenic trioxide & lead nitrate) were tested individually, in laboratory static bioassays using artificial sea water, to determine the 24-96 hr LC_{50} values. As indicated by 96 hr LC_{50} values PMA was found to be the most toxic and lead nitrate the least toxic. Cadmium chloride showed a sevenfold increase in toxicity with increase in the time of exposure from 24 to 96 hours. Hepatopancreas and Gills of Scylla serrata exposed to acute 96 hr LC_{50} values of these metal compounds showed marked histopathological changes, although the free amino acid pool from hepatopancreas and muscle tissues remained unaffected. Chronic exposure of 30 days to sublethal concentrations of mercury and cadmium brought out extensive degeneration changes in the hepatopancreas and gills of treated animals. Cellular proliferation of secondary lamellae accompanied by cyst formation and necrotic regions were often seen in the gills of cadmium treated crabs. The treated samples, however did not show any reduction in number or marked depletion in the free amino acid pool from muscle and hepatopancreas.