PROTECTIVE INFLUENCE OF ZINC AND ASCORBIC ACID ON CADMIUM INDUCED NEPHROPATHY IN THE FRESHWATER CAT FISH HETEROPNEUSTES FOSSILIS (BLOCH).

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Abstract

This study reports the curative effects of zinc and ascorbic acid on cadmium induced histopathological changes in kidney of the freshwater cat fish Heteropneustes fossilis. Exposure of the fish to 16.14 mg/L sub lethal concentration of cadmium for 30 days induced hypertrophy of glomeruli, dilation and rupture of Bowman's capsule and glomerular tuft, degeneration of epithelial cells lining the renal tubules, haemorrhage between tubules, hyaline degeneration of tubules, indistinct lumen, cytoplasmic vacuolation, accumulation of lipid droplets and generalized necrosis in kidney. However, 16.14 mg/L cadmium + 0.5 mg/L zinc and 16.14 mg/L cadmium + 1.25 mg/L ascorbic acid exposed fish groups revealed signs of recovery which were more progressive with ascorbic acid as evident from considerable restoration of normal size of Bowman's capsule, structure of tubular epithelial cells and almost normal structure of renal corpuscles. Our study concludes that zinc and ascorbic acid have protective influence on cadmium toxicity in fish but higher doses than the one selected in the present case are probably needed to overcome the effects of cadmium toxicity.

Keywords

Heteropneustes fossilis, Cadmium, Kidney, Histopathology, Zinc, Ascorbic acid.

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