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Risk assessment in Nile tilapia (Oreochromis niloticus) and African mud catfish (Clarias gariepinus) exposed to cassava effluent

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Abstract

Toxicity of cassava effluent in water on aquatic lives was examined via acute and chronic bioassay experiments on Clarias gariepinus (I) and Oreochromis niloticus (II) under laboratory conditions, using standard procedures. The effluent cyanide concentration exceeded the WHO limit for wastewater. Fish body weights and haematological parameters (HMP) significantly decreased with increasing effluent concentration at $p \leq 0.05$. Toxicity on HMP for the respective (I) and (II) varied from 5.4 to 52.8; 4.8 to 51.9% for packed cell volume, 4.1 to 43.9; 5.3 to 64.0% for red blood count, 0.0 to 15.7; 0.0 to 61.4% for white blood count, 3.6 to 45.9; 5.2 to 49.5% for haemoglobin, 11.6 to 71.9; 28.4 to 63.8% for total protein, 11.5 to 75.5; 15.0 to 58.2% for albumin and 11.8 to 75.0; 46 to 83.9% for globulin. Acute exposure yielded 96-h LC50 values of 0.45% for (I) and 0.25% for (II) and chronic exposure caused reduced growth and poor blood quality.

Keywords

Bioassay, Cassava effluent, Mud catfish, Tilapia,