



# Modulatory effects of green tea extract against the hepatotoxic effects of 4-nonylphenol in catfish (*Clarias gariepinus*).

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## Abstract:

The antioxidant role of the green tea (*Camellia sinensis*) extract (GTE) was examined to remedy the toxic effects of (0.2mg/l-1) 4-nonylphenol(4-NP). Biochemical parameters, antioxidant enzymes, liver lipid peroxidation (LPO), DNA fragmentation, and apoptosis as well as histopathology of liver of African catfish *Clarias gariepinus* were considered. Catfishes were divided into four groups: first group (control), second group (0.2mg/l-1 of 4-NP), third group (0.2mg/l-1 of 4-NP +100mg GTE l-1water), and fourth group (0.2mg/l-1 of 4-NP +200mg GTE l-1water). The results showed that significant increments of serum glucose, AST, ALT, total protein, total lipids, cholesterol, G6PDH, and cortisol. Meanwhile, serum acetylcholinesterase, ALP, and LDH were significantly reduced. In addition, antioxidant enzymes (SOD, CAT, GST, and TAC) levels were reduced in 4-NP treated fish compared to control. Also, there were significant increments in hepatic LPO, DNA fragmentation, and apoptotic erythrocytes in 4-NP treated fish compared to control. Liver of 4-NP treated fish showed some histopathological alterations such as, vacuolization in hepatocytes, congestion in central vein, infiltration of mononuclear inflammatory cells, and necrosis as well as depletion of glycogen content of liver. Addition of green tea extract into the water restored the alterations in most of those biomarkers induced by 4-NP. We concluded that, GTE has a protective role against hepatic failure, depletion of antioxidant defense, and genotoxicity induced 4-NP in *C. gariepinus*.

## Keywords:

4-Nonylphenol; GTE; Genotoxicity; Histopathological; Oxidative damage

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