

## **Hepatoprotective effects of *Pandanus amaryllifolius* against carbon tetrachloride (CCl<sub>4</sub>) induced toxicity: A biochemical and histopathological study**

### **ABSTRACT**

The purpose of this study was to determine the phytochemical constituents of *Pandanus amaryllifolius* as well as to evaluate its ability to protect against acute hepatic damage caused by carbon tetrachloride (CCl<sub>4</sub>) in rats. In animals pre-treated with *P. amaryllifolius* and intoxicated with CCl<sub>4</sub>, biochemical parameters such as aspartate aminotransferase (AST), alanine aminotransferase (ALT), glutathione (GSH), catalase (CAT) and malondialdehyde (MDA) were used to assess hepatic damages. Histopathological assessment was also done to evaluate the CCl<sub>4</sub> mediated hepatic injury in rats. *P. amaryllifolius* antioxidant activity was measured using free radical scavenging DPPH (1,1-diphenyl-2-picrylhydrazyl) method. The stable DPPH level was lowered by *P. amaryllifolius* extract. The value of the half-maximum inhibitory level (IC<sub>50</sub>) was 46.8 µg/ml. Phytochemical screening of *P. amaryllifolius* extract showed the presence of tannins, alkaloids, saponins, terpenoids and flavonoids except pholabatannins and cardiac glycosides. The total phenolic content (TPC) was 35.99 ± 0.04 mg GAE/g and total flavonoid content (TFC) was 59.96 ± 0.013 mg CAE/g of extract. *P. amaryllifolius* pre-treated groups displayed significantly increased catalase antioxidant enzyme activity relative to the CCl<sub>4</sub> treated group (57–82%, *P* < 0.05). *P. amaryllifolius* was found to moderately reduce serum ALT and AST levels (4–34%, *P* < 0.05). The formation of MDA due to lipid peroxidation was greatly reduced (29–70%, *P* < 0.05) when compared to the CCl<sub>4</sub> treated group, while GSH was raised in a dosage dependent way (94–100%, *P* < 0.05). Reduced histological changes in the liver were clear evidence of *P. amaryllifolius* protective effect. According to the research findings, the antioxidant and free radical scavenging properties of *P. amaryllifolius* may be responsible for its hepatoprotective benefits.