ABSTRACT

*Elephantopus scaber* Linn, a traditional medicinal plant, was analysed for its phytochemicals as well as its pharmacological effects with special emphasis on hepatoprotection. Methanolic extract of *Elephantopus scaber* exhibited hepatoprotective, antioxidant, anti-inflammatory and antifibrotic activities. Toxicity study was performed to assess the safety of the plant extract.

The methanolic extract of the plant exhibited superoxide, hydroxyl radical, nitric oxide radical scavenging activity and inhibition of lipid peroxidation in *in vitro* models. *In vivo* antioxidant and hepatoprotective efficacy of the methanolic extract of *E. scaber* was tested in CCl₄ and paracetamol induced hepatotoxic models. The levels of AST, ALT, ALP, GGT, TP and ALB which were altered by the administration of toxins were reversed by the administration of the plant drug. The methanolic extract of the plant exhibited *in vivo* antioxidant activity as evidenced by the attainment of altered level of TBARS, CD, GSH, SOD, and catalase towards normalcy. Histopathological observations of the liver tissues of the various experimental groups further corroborated the biochemical findings. The plant exhibited antiinflammatory activity as it reduced the rat paw edema induced by carrageenan and formalin. Toxicity studies revealed the nontoxic nature of the methanolic extract of *E. scaber*. The plant exhibited antifibrotic effects both in the preventive and curative models of fibrosis. The activities of the enzymes AST, ALT, ALP and LDH altered in the control group were brought to normal by the administration of the plant drug. The liver hydroxy proline levels altered in the control group was returned to normal. The
histopathological and immunohistochemical changes in the control group were returned to normal by the administration of the plant extract.

The phytochemical analysis of the methanolic extract showed the presence of terpenoids, flavonoids, essential oils, alkaloids, phenols, polyphenols, carbohydrates, oligosaccharides and amino acids which might be responsible for the antioxidant, hepatoprotective, antiinflammatory and antifibrotic effects. The methanolic extract of the plant was purified and purified sample was found to contain scabertopin, dihydroelephantopin, elescaberin, luteolin and methoxycinnamaldehyde. The purified sample exhibited hepatoprotective effect in CCl₄ induced hepatotoxicity. These studies demonstrate the hepatoprotective effect of *Elephantopus scaber*.

**Key words**

*Elephantopus scaber*, Hepatoprotection, Liver fibrosis.