

ABSTRACT

In the present study, two medicinal plants Melothria maderaspatana and Osbeckia octandra have been investigated for anti-hepatotoxic activity. Two hepatotoxins carbon tetrachloride and ethanol were used in the preliminary studies. Detailed studies were carried out with animals where hepatotoxicity was induced with carbon tetrachloride. An attempt has also been made to isolate the active components.

The ability of the two plant extracts to protect the liver against the changes mediated by carbon tetrachloride or ethanol confirms that both plants possess anti-hepatotoxic properties at least against the two chemicals used. Thus pre-or post treatment with either of the plant extracts markedly decreased carbon tetrachloride mediated alterations in liver histopathology as well as serum enzymes (alanine aminotransferase, aspartate aminotransferase and alkaline phosphatase) levels and also the ethanol mediated changes in serum and liver lipid, cholesterol and glutathione levels. The magnitude of anti-hepatotoxic properties varied with the dosage used and the time of storage. No significant seasonal variations were observed with either of the two plants investigated. The two plant extracts themselves did not have any effect

on either the serum enzyme levels, the levels of ^{total} lipids, cholesterol or the liver histopathology.

Results of studies on the mechanism of action suggest that the two plant extracts may have slightly different modes of action. Thus, while both plant extracts were able to stimulate the immunological defense on the test animals and protect the livers of these animals against alterations in (a) the microsomal enzyme activity (b) lipid peroxidation and (c) reduced glutathione levels, only Melothria maderaspatana was able to enhance the lysosomal stability in the liver. Osbeckia octandra was unable to prevent lysosomal damage induced by carbon tetrachloride.

Investigations with Melothria maderaspatana and Osbeckia octandra showed that the extracts of these plants had no toxicological effects on the histopathology of various body organs, liver function, haematological parameters (haemoglobin concentration, red blood cell count, white blood cell count and packed cell volume) or on the reproductive ability of these experimental animals. The general conditions of the animals also did not change and all the animals remained in good health throughout the experimental period.

In the present investigation it was evident that the liver protective actions of the crude extract of Melothria maderaspatana plant is mediated by a mixture of three alkaloids of almost similar potency, while in Osbeckia octandra, it is mediated through the action of a flavonoid and two other components which are possibly flavonoid derivatives.