(B) **Summary**

Antioxidative and hepatoprotective effects of some Sri lankan medicinal plants in chemically induced hepatotoxicity in mice.

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During the last two decades, due to a variety of reasons there has been a remarkable increase in the interest in herbal remedies demonstrated by the general public of most developed countries. Due to this resurgence of interest in the west, global trends in medicinal plant research are also changing.

Since the scientific information regarding the efficacy of many of the plants with reputed antihepatotoxic activity is far from adequate, it was decided to carry out the present study of some plants used for antihepatotoxic activity.

Hepatotoxicity was induced by the administration of a single intraperitonial dose of CCl_4 (0.5 mL kg^{-1} CCl_4 in olive oil) in one model of ICR mice (30-35g body weight) and in the other by administration of paracetamol (300 mg kg^{-1} in saline) orally, after a 16 h fast. Aqueous extracts of the plants *Asparagus falcatus*, *Epaltes divaricata*, *Asteracantha longifolia*, *Corriandrum sativum* and *Vetiveria zizanioides* (0.9 g kg^{-1}) were used. Two treatment regimes were carried out; Pre-treatment and post-treatment. CCl_4 control, pre-treated and post-treated groups were further divided into two groups each and were sacrificed 24 hours and 4 days after the administration of CCl_4. Paracetamol treated groups were sacrificed 4 hours after the administration of paracetamol. N-Acetyl cysteine was used as the positive control.

Blood was drawn by cardiac puncture to determine liver enzyme levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP) and lipid peroxidation in serum. Liver tissue was excised and used for the determination of liver reduced glutathione level, lipid peroxidation and for the histopathological assessment of liver damage. Cytosolic fractions were prepared for the determination of Glutathione Peroxidase(GPx), Glutathione Reductase(GR) and Glutathione-S-transferase(GST).

Both CCl_4 and paracetamol produced liver damage as manifested by the significant rise ($p<0.001$, Student's t-test) in serum enzyme levels of ALT, AST and ALP and a reduction ($p<0.001$) in the liver reduced glutathione level (GSH) compared with respective control values.

The elevated levels of biochemical parameters declined significantly in all plant extract treated groups. There were changes in the rate of recovery and the level of significance among the plant extracts. Pre-treatment showed a faster recovery in almost in all plant extracts than the post-treatment. Administration of the plant extract alone didn't show any significant changes in enzyme levels and liver GSH. Histopathological changes also provided supportive evidence for the results obtained from biochemical analysis. Out of the five plant extracts, three plants selected, *Asteracantha, Asparagus* and *Vetiveria* were evaluated for their antioxidative effect in detail. They also provided supportive evidence for the preliminary results.

The overall results of the study indicate that, under the present experimental conditions all the plant extracts used in the study possess hepatoprotective effects and their activity can be due to the antioxidative properties found, although the extent of protection vary among different plant extracts.

Papers published on work done under the contract;

R P Hewawasam, K A P W Jayatilaka, C Pathirana, L K B Mudduwa.(2003) Protective effect of *Asteracantha longifolia* extract in mouse liver injury induced by carbon tetrachloride and paracetamol. **Journal of Pharmacy and Pharmacology**. 55: 1413-1418.

R P Hewawasam, K A P W Jayatilaka, C Pathirana, L K B Mudduwa.(2004) Hepatoprotective effect of *Epaltes divaricata* extract on carbon tetrachloride induced hepatotoxicity in mice. **Indian Journal of Medicinal Research**. 120: 26-30.