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# Effect of Liv.52 and Carbon Tetrachloride on the Liver Protein and Nucleic Acids

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The liver is the key organ concerned with various metabolic processes and the activity of the drug metabolizing enzymes are markedly affected by factors such as starvation, drugs etc[1,2]. Carbon tetrachloride is a classical hepatotoxin and the protective actions of an Indian indigenous herbal drug Liv.52 against this is reported in this communication. Liv.52 contains a mixture of extracts of several herbs and is widely used in several hepatic diseases in hospitals in India.

## MATERIALS AND METHODS

Experiments were performed on adult albino rats weighing between 150 to 200 g and divided into four groups of eight rats each. The first group, which served as the controls, received only the normal saline vehicle. Groups II was fed orally by stomach tube with a single dose of carbon tetrachloride (0.2 ml/100 g body weight) and its effects were studied 24 hours after its administration. In Group III, the animals were pretreated with Liv.52, 5 ml daily for 5 days. Later this group was subjected to $CCl_4$ challenge and immediately, virtually simultaneously with $CCl_4$, Liv.52 was administered and, like the other $CCl_4$-treated group was sacrificed 24 hours later. Group IV was fed only with 5 ml of Liv.52 daily for 5 days. Animals of all the groups were sacrificed by decapitation and the protein of the total liver and microsomal fractions were determined by the bluret method[3]. The DNA was separated from the protein by using 5% hot perchloric acid and the estimated by the diphenylamine reaction[4], and the RNA was estimated by the orcinol reaction[5]. Each 5 ml of Liv.52 consists of extracts of *Capparis spinosa* 34 mg ; *Solanum nigrum* 16 mg; *Cassia occidentalis* 8 mg; *Terminalia arjuna* 16 mg; *Achillea millifolium* 8 mg; *Tamarix gallica* 8 mg.

## RESULTS AND DISCUSSION

From the table it is clear that carbon tetrachloride induced significant reduction in the liver microsomal protein and RNA without much alteration in the DNA content. This could be explained on the basis of its effect primarily on the RNA and secondarily causing a decrease of RNA dependant synthesis of microsomal proteins or it may be having an independent specific effect on the synthesis of microsomal enzymes. The group (III) pretreated with the indigenous drug Liv.52 and subjected to challenge with carbon tetrachloride showed no change in these parameters indicating that this drug has provided protection to the liver either by causing quicker regeneration of the liver tissue or specifically antagonizing the damaging effect of carbon tetrachloride.

## REFERENCES

1. Kato, R., Chisara, E. and Vassanelli, E. (1964) *Biochem. Pharmacol.*, 13, 69-84.

2. Anthony, L.E. (1973) *J. Nutr.,* 103, 811-820.

3. Layne, E. (1957) in Methods in Enzymology, Vol.3, (colowick, S.P. and Kaplan, N.O., eds) p.400, Academic Press, N.Y.

4. Burton, K. (1956) *Biochem. J.*, 62, 315-323.

5. Ceriotti, G. (1955) *J. Biol. Chem.,* 214, 59-70.