COMPARITIVE STUDY OF THREE DIFFERENT FORMULATIONS OF LIVOL FOR THEIR HEPATO PROTECTIVE ACTIVITY AND IMPROVING LIVER FUNCTION IN ANIMALS

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ABSTRACT

The three different formulations of livol were evaluated for hepatoprotective activity in rats by inducing liver damage by carbon tetra chloride. The three different formulations exhibited significant at 2.5ml/kg,7.5ml/kg, protective effect by reducing serum level of SGPT, SGOT, cholesterol and bilirubin when compared with normal group. The hepatoprotective activity of all the formulations of hepatocytes be attributed to increased regeneration of hepatocytes and inhibitory effects on microsomal enzymes.

KEY WORDS: carbon tetrachloride, serum glutamate oxadoacetate transaminase.

1.INTRODUCTION

Liver, the largest organ in the vertebrae body, most of the biosynthesis is carried out by the liver. Plays a major role in intense metabolic activities like detoxification and excretion of many exogenous and endogenous compounds. (Reddy, 1993). Liver injury, caused by toxic chemicals and contain drugs has been recognized as a toxicological problems. In the absence of liver protective drugs in modern system of allopathic medical practice, herbal drugs are playing an important role in health care programmes worldwide and there is a resurgence of interest in herbal medicines for treatment of various hepatic ailments (Neha and Rawal, 2000) as a hepato livol, a herbal prepararion of Indian herbs. Consisting of *Androgeophis paniculata(kalmegh), Echipta alba, Echipta Erica* linn, *phylanthus nirun* and *Terminalia arjuna.* The *Androgeophis paniculata* was found to be effective as hepatoprotective agents(Dwivedi,1986), *Echipta alba* was found to countract the increase in liver weight, lipid peroxidation (Chandra, 1986) *Echipta Erica* linn has been reported to process literotonic activity (Dhawan and saxena, 1958; Misra and sharema, 1967), *kalmegh* was found to increase liver weight, binary flow (chowdary, 1978) and *Terminalia arjuna* showed cardiotonic activity (Gupta, 1976). There were evaluated individually. The 3 different formulations of livol was proved to be effective as hepatoprotective drug when compound to different marketed formulation such as stimulativ, liv 52 and Tefroli hence, an attempt was made to asses the livol for hepatoprotective activity against CCl_4 induced hepatotoxicity in rats.

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2.MATERIALS AND METHODS

Formulation of livol were collected from R&D laboratory of Indian herbs Ltd., Bangalore, were the suspension of livol A,B and C. albino wistde rats weighingly between (120 to 150 gms) were used, housed under standard laboratory conditions (12h light/dark cycles; 25±2° C; 60±5% relative humidity). The animals were divided into 5 groups of six animals each and maintained an standard commercial pellet feed (M/S lipton india Ltd., Bangalore, india) and water *ad libitum.* They were given a week time to get acclimatized with the laboratory conditions (Handa and Sharma, 1990).

Table 1: Effect of formulation of Livol A, B, and C on CCl_4 induced hepatotoxicity in rats

Groups	Dose ml/kg	Liver wt. av.wt/100g	Liver vol Av.vol/100g	SGPT U/L	SGOT U/L	Cholesterol Mg/dl	Serum bilirubin mg/dl
Normal control group I		3.56± 0.105	3.3±0.093	106.33 = 7.72	187.33 ±11.00	77.83 ± 3.044	1.13 ±0.13
CCl_4 groupII	2.5	6.2± 0.066	5.53 ± 0.080	148.5 ± 7.51	294.5 ± 21.37	109.16 = 4.59	10.98 ± 0.47
Livol A	2.5	4.28± 0.110 **	4.05 ± 0.067 **	121.5 ± 8.83 *	224.83 ± 8.46 *	89.16 ± 4.52 **	4.58±0.51 **
Livol B	2.5	4.25± 0.112 **	4.41± 0.073 **	113.5± 7.55 ***	217.16 ±16.11 ***	95.5± 2.23 *	7.08±0.69 *
Livol C	2.5	4.08± 0.130 ***	3.46± 0.072	114.66 =6.14 ***	197.5± 6.14 ***	86.66 ± 3.69 ***	4.95±0.29 ***

values are mean ±SEM, n=6, P<o.oo1 students't' test ANOVA. Activity of all the 3 formulation of livol on CCl_4 induced hepatotoxicity in rats.

*** = effective ** = moderatively effective

* = slightly effective

Group I served as normal control, was administered with only vehicle(1% tween 80). All other groups received carbon tetrachloride(2.5ml/kg), along with equal volume of liquid paraffin for two successive days. Group II animals were given only with carbon tetrachloride, which served as positive control. Group III served as test and received LivolA (2.5ml/kg). group IV treated with livol B(2.5ml/kg) and group V treated with livol C(2.5ml/kg) through oral route respectively. The drug treatment was carried out orally from first day to ninth day with concurrent administration of carbon tetra chloride on 7th and 8th day to combat severe hepatotoxicity, on 10th day rats were anesthetized with ether and blood samples were collected by penetrating the retro orbital plexus. The serum was separated after coagulating at 37°C for 30 min and centrifuged at 2500 rpm for 10 min and used for estimation of bio chemical parameters such as glutamate oxaloacetate transaminase(GOT), glutamate pyruvate transaminase (GPT) (young, 1975), serum bilirubin (Jendrassik and grof, 1938), cholesterol (Allain, 1952), liver weight and liver volume. All the observation of the present study are presented in table no 1. The reduction in biochemical parameters was calculated by considering the difference in biochemical parameter between hepatotoxin treated and control groups to determine significant group differences of all treated groups with that of control group. Statistical significance was analysed by employing one way ANOVA followed by students t test values are expressed in at $p < 0.01$, $p < 0.05$, $p < 0.01$ were considered significant.

3.RESULTS AND DISCUSSION

Carbon tetrachloride intoxication in normal rats elevated the serum levels of GOT, GPT, bilirubin, cholesterol,liver wieght, weight and liver volume.In the present study ,the serum enzyme levels of treated groups were significantly low ($P < 0.001$) when compared with carbon tetrachloride treated controls.The hepatoprotective activities of all formulations of livol-A,B and C at a dose of 2.5 ml/kg were significant.

Among these formulations of livol,the formulations livol-C was shown more effective in reducing the levels of serum bilirubin and other parameters.here, it can be concluded from this invastigations,that the formulations of livol A,B and C passes hepatoprotective activity.

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