ORIGINAL RESEARCH PAPER

Zoology

PROTECTIVE EFFECT OF AGERATUM CONYZOIDES AGAINST CARBON TETRACHLORIDE – INCLUDED HEPATIC DAMAGE IN RATS.

KEY WORDS:
Hepatoprotectivity, Havonoides, Glutomic Pyruvic Transaminase.

Manish Soni Mansarover Global University Bhopal

Amita Gupta Mansarover Global University Bhopal

Manik Sharma Department of Zoology Career College Bhopal

ABSTRACT

The present study was conducted to the know the Hepatoprotective activity against the carbon tetrachloride including toxic chemical in rats. The Petroleum ether, ethyl acetate and methanol extract of Ageratum conyzoides was prepare and evaluated for photochemical screening. The serum level of glutamic oxaloacetate transaminase (SGOT) glutomic pyruvic transaminase (SGPT) and billirubin were investigated for the assessment of hepatoprotectivity of ethyl acetated extract. Additionally, the histological change in liver were obtained. The primary photochemical investigation of the extract of Ageratum conyzoides revealed the presence of Havonoides, tannins, and carbohydrates. Pre-treatment with ethyl acetate extract of Ageratum conyzoides caused significant ($P<0.05$) decrease in serum SGOT, SGPT and billirubin when compared to control group rats treated CCl4 in dose dependent manner. The outcomes of histological study revealed that there was significant reversal of histological function of liver. In conclusion, the finding of study validated. That the Ageratum conyzoides can improve CCl4 –induced hepato toxicity.

INTRODUCTION:-

Liver regulation in various important metabolic function does lunatic damage which is associated with distortion of their metabolic function. Today liver damage is a very common aliment in the world resulting serious debilities raging from several metabolic disorders to even motility.

Liver possess antioxidant defuse system consisting of antioxidant such as GSH, ascorbic acid, and Vitamin E and antioxidant enzymes such as SOD catalase and GPX to produce own alls against oxidants system, which causes destruction of all components and cause death. Hepatocytes which make up the majority of the liver structure are very active in the metabolism of exogenous chemicals and this is one of the major reasons why the liver is a target for toxic substance. Carbon tetra methyl chloride in one of the most used hepatotoxins in the experiments and study of liver diseases. The heptoprotective effect of CCL4 is largely due to its action metabolism and trichloromethyl radical. Many traditional remedies employ herbal drugs for the treatment of liver ailments.

Ageratum cayzoides (Astersceac) is commonly known as "write weed". Its application in herbal medicine varies by region.

MATERIAL AND METHODS.

Preparation of Plant Matrial:-

The whole plant Ageratum conyzoides were collected from the local surrounding at Bhopal region, during the month of August to Oct. 2019. The plant was Ace then dictated by Dr. Tayff Safi (Principal) Gandhi P.G. College Bhopal. The voucher specimens are kept in the P.G. Department of Zoology (Career college Bhopal). The whole Plant Ageratum conyzoides were collected and washed throughly under running tap water then, The dried plant material was coarsely powdered and subjected to extraction.

Prepaetion of Extract:-

The extract was done by maceration using petroleum ether, ethyl acetate and methanol. The extract obtained was evaporated in rotary evaporator to get a powdery mass. The powder extract obtained are then subjected to phytochemical analysis to detect the chemical constitution present in each extract.

Animals:-

Male winter rates (135-108g) were used for evolution of hepatoprotective activity. The animals were housed in polypropylene cages at 25°C±1°Cwith the relative humidity of 55±5% under 12h/12h light/dark cycle they receive a standard chow,water and labium during experimentation, throughout the experiments pressed according to the suggested international ethical guidelines for the care of laboratorical animals. The study protocol was approved by the institutional Animaly. According to the regulation of committee for the purpose of control and supervision of Experimental Animals.

CCl_4induced hepatotoxicity:-

Assessment of heptaprotective activity was carried out in a winter albino rats. The animals were segregated in to four groups of six animals each. Group I served as normal control receiving 5% CMC (10 ml / kg) Group II received (1ml/ kg ip) with equal volume of olive oil(50%v/v) for two successive days and were maintained as CCl_4 group. Group III animals were treated orally for seven days with suspension of ethyl acetate extract (100mg/kg) Group IV animals were treated with CCl_4 and ethyl acetate extract (100mg/kg) after treatment, The blood samples were collected via retro orbital and serum is separated by centrifugation at 2500 rpm for 15 minutes is used for the estimation of biochemical marber enzyme after collecting the blood, The liver is separated and weighed.

Biochemical determination:-

Biochemical Parametres such as serum glutamate oxaloacetate transaminase (SGOT) serum glutamate pyurvate transaminase (SGPT) and serum billlirubin were determined.

Histopathology:-

Liver was excised quickly and fixed in 10% buffered neutral formalin and processed for paraffin embedding following the standard micro techniques. Section of liver is stained with Alumhaematoxylin and Eosin were observed microscopically for histopathological changes.

Statistical analysis:-

The results are expressed as mean ± SUM of Six animals from each group. The data were evaluated by – ANOVA followed by Turkeys multiple Comparison testes. P values "<0.05" are considered statically significant.

Results and Discussion:-

Phytochemicals Screening of Ageratum conyzoides :-

Presence of classes of secondary metabolite may be a useful indicator of both efficacy and potential toxicity. Hence test for

the presence of phytochemical classes with known bioactivity was done by the Preliminary phytochemical investigation of the extracts of whole plants. The presence of flavonoids treatment with ethyl acetate extracts of Ageratum conyzoides at the dose (100mg/kg) decreased. The activity of SGOT, SGPT and total billirubin on CCl_4treated.

Table1. Effect of methanolic extract of isolated compound on biochemical parameters of liver in rats against CCl_4 administration.

S. No.	Treatment	Dose	SGOT/AST(IU/L)	SGPT/ALT (IU/L)	ALP (IU/L)	BILIRUBIN (IU/L)
1	Vehicle Saline	10 ml/kg	32.1±4.845	28.8±3.746	105.4±8.016	0.76±0.048
2	Control (CCl4)	-	136.6±5.680*	132.6±2.581*	302.3±9.872*	1.81±0.111*
3	Silymarine	100 mg/kg	44.1±3.920**	38.5±8.336**	125.1±7.833**	0.80±0.054**
4	MEEA	200 mg/kg	84.6±4.226**	78.6±6.377**	223.5±9.027**	1.08±0.057**
5	MEEA	400 mg/kg	69.1±4.792**	63.1±6.177**	161.8±5.344**	0.93±0.031**

Each group consist of six animals (N=6). MEEA = Methanolic extract of Eclipta alba.

*P<0.001 as compared to vehicle treated group
** P<0.001 as compared to CCl_4 treated group

Table 2Effect of isolated compound Apigenin of plant product on biochemical parameters of liver in rats against CCl_4 administration.

S. No.	Treatment	Dose	SGOT/AST(IU/L)	SGPT/ALT (IU/L)	ALP (IU/L)	BILIRUBIN (IU/L)
1	Vehicle Saline	10 ml/kg	32.1±4.845	28.8±3.746	105.4±8.016	0.76±0.048
2	Control (CCl4)	-	136.6±5.680*	132.6±2.581*	302.3±9.872*	1.81±0.111*
3	Silymarine	100 mg/kg	44.1±3.920**	38.5±8.336**	125.1±7.833**	0.80±0.054**
4	Isolated fraction	100 mg/kg	75.36±4.313**	61.76±5.243**	197.5±7.152**	0.902±0.042**
5	Isolated fraction	200 mg/kg	56.1±3.654**	52.4±4.231**	141.1±3.253**	0.877±0.021**

Each group consist of six animals (N=6)

*P<0.001 as compared to vehicle treated group
** P<0.001 as compared to CCl_4 treated group

The present study had been attempted to evaluate the role of hepatoprotective activity of crude methanol extract of Ageratum conyzoides and isolated bioactive fractions (F-I) against carbon tetra chloride. The results of the experiment of alanine aminotransferase (ALT), aspartate aminotransferase (AST) alkaline phosphatase (ALP) and Bilirubin in the serum of rats are given in the (Table 1). The table shows that in normal control rats, the serum activity of ALT, AST, ALP and Bilirubin were in normal range.

In Toxicant (ISO+RIF) group the level of SGOT was significantly (P <0.001) elevated to 131.1±8.234 IU/L. In Silymarin + (ISO+RIF) group the level of SGOT was 52.12±5.268 IU/L significantly lower than that of Toxicant (ISO+RIF). In A.conyzides extract 200 mg/kg and 400 mg/kg + (ISO+RIF) the level of SGOT was significantly reduced to 83.66±4.13 and 67.76± 3.764 respectively (Table-2).

Results of the biochemical estimations were reported as mean blood glucose levels ± standard deviation (MEAN±SD). The total variation present in a data was analysed by one way analysis of variance (ANOVA) and followed by Bonferroni multiple comparison test using Sigma stat 3.5. Values were statistically significant at *p<0.001 when compared to all group with diabetic control group.

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