Biochemical and Hematological Evaluations of *Bryonia Epigaea* Tubers

B.N. Sinha, D. Sasmal & S.P. Basu
Department of Pharmaceutical Sciences, Birla Institute of Technology, Mesra, Ranchi – 835 215.

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ABSTRACT: *Bryonia epigaea (cucurbitaceae) has been evaluated on various inflammatory models in rats in our laboratory. Ana anti-inflammatory drug(s) irrespective of its potency may not be devoid of undesirable effects on biochemical and hematological parameters. Alcoholic extract of Bryonia epigaaea (BE-Extract) at the dose of 50 mg/kg body weight, was administered to rats. Hepatotxic and nephrotoxic effects of BE-Extract were studies by measuring cholesterol, urea, uric acid, SGOT, SGPT and glucose levels in blood. Effects of BE-Extract on RBC count, WBC count, platelet count, hemoglobin content, clotting and bleeding time were also studied.*

INTRODUCTION

Bryonia epigaea (cucurbitaceae) is known as Akasgaddah in Hindi. It has been used in traditional medicine as bitter, alexipharmic, emetic and antiinflammatory[1]. The root of this creeper is said to possess alternative and laxative properties. It is usually given in syphilitic rheumatism and later stages of dysentery[1,2]. It is of common occurrence in the scrub jungles of South India along the hilly tracts. LD50 value of alcoholic extract of Bryonia epigaea (BE-Extract) was found to be 1g/kg body weight on Swiss albino mice. We have already reported that BE-Extract has significant anti-inflammatory, analgesic and antispasmogenic activities[3].

The present study deals with the chronic toxicity studies of BE-Extracts on hepatic, renal and hematological functions in Swiss albino rats.

MATERIALS AND METHODS

Dried and milled tubers of Bryonia epigaea was macerated with 90% ethniol (72h). The solvent was removed under vacuo and the residue was suspended in carboxymethylcellolose (CMC). Healthy inbred albino rats (swiss) of either sex weighing 150-200 g were selected and divided into two groups, each containing 10 animals for each experiment. The animals were kept under identical laboratory condition for one week and were provided with normal standard pellet diet and tap water *ad libitum.* To group I (Control) only CMC suspension was given and group II received the BE-Extract at the dose of 50 mg/kg body weight. After 3 hours, blood was collected by cardic puncture in the heparinized tube for biochemical studies.

Heparinized whole blood was taken for the estimation of cholesterol[4,5], creatinine[4], urea[6] and glucose[7,8]. Serum was separated from clotted blood for the estimation of uric acid[4], serum aspertate aminotransferase (SGOT) and serum alanine aminotransferasee (SGPT)[9].

For hematological parameters, blood was drawn from orbital sinus with the help of a

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capillary tube and used for the estimation of red blood cell (RBC) count[10], white blood cell (WBC) count[10], platelet count[11], hemoglobin content[10], bleeding time and clotting time[11].

The data were statistically analysed by students 't' test.

RESULTS

The results have been tabulated in Table 1 and 2.

HEPATORENAL PARAMETERS

There was insignificant change in cholesterol, creatinine urea, uric acid, SGOT and SGPT activities in blood of BE-Extract treated animals as compared to that of control. It was also observed that when BE-Extract was administered to alloxan induced diabetic rats, glucose level was lowered by 28% but there was no change in glucose level of animals treated with BE-Extract alone.

HEMATOLOGICAL PARAMETERS

It was observed that total count of WBC and hemoglobin level had decreased significantly while clotting time and bleeding time had increased in BE-Extract treated animals. There was no appreciable change in total count of RBC while platelet count decreased.

DISCUSSION

The decrease in total count of WBC supported the anti-inflammatory activity of BE-Extract, as reported earlier 3. The decrease in platelet count, i.e. antiplatelet action of anti-inflammatory drugs have been advocated by Zucker and Peterson12. Increase in clotting time and bleeding time after drug administration suggested that BE-Extract might have anticoagulant property.

Since glucose level was lowered by 28% in diabetic rats, it can be concluded that BE-Extract had hypoglycemic activity in diabetic animals only but it didn't lower the normal glucose level.

The insignificant changes in cholesterol, creatinine, urea, uric acid, SGOT and SGPT levels, indicated that BE-Extract had no adverse effects on liver and kidney functions.

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Table-1 Effect of BE-Extract on Hepatorenal parameters.

Parameters	**Control**	**Drug Treated**
Cholesterol (mg/100ml)	70.20 ± 1.64	73.05 ± 1.72*
Creatinine (mg/100ml)	1.02 ± 0.08	1.05 ± 0.40*
Urea (mg/100ml)	25.2 ± 1.72	27.4 ± 1.86*
Uric acid (mg/100ml)	2.5 ± 0.44	2.5 ± 0.13*
SGOT (Unit / Litre)	86.5 ± 4.6	82.3 ± 6.2*
SGPT (Unit / Litre)	65.18 ± 6.82	61.62 ± 7.73*

	Control	**Drug Treated**	**Diabetic**	**Diabetic & Drug treated**
Glucose (mg/100ml)	98.4 + 1.22	97.96 + 1.54	178.43 + 1.73 **	130.0 + 1.04

Each value represents the mean + SEM of ten observations.
* Values are insignificant
** P<0.05, compared to control (students 't' test)

Table-2 Effect of BE-Extract on Hematological parameters.

Parameters	**Control**	**Drug Treated**
RBC Count (millions / cmm)	5.67 ± 0.029	5.24 ± 0.21 **
WBC Count	6567 ± 78.90	5360 ± 43.01*
Platelet Count	377500 ± 11068.67	338500 ± 7236**
Hemoglobin content (g/100ml whole blood)	12.84 ± 0.202	10.96±0.990**
Clotting time (Secs.)	250 ± 8.198	350 ± 8.586*
Bleeding time (Secs.)	187 ± 16.02	290 ± 10.78

Each value represents the mean ± SEM of ten observations
*P<0.001, **P<0.01, Compared to control (Students 't' test)