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Comparative Study of Leaves of *Butea Monosperma* & *Bauhinia Variegata* for Hepatoprotective Activity

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Abstract:

The health advantages of plant-based medicines have had an influence on people all around the world, and they are also frequently more affordable than contemporary synthetic remedies in many nations. Despite the extensive experiences in use of medicinal plants in traditional medicine, scientific study and identification of active plant compounds and their effects can lead to the discovery of new therapeutic benefits and the production of nature-based products in the future. To achieve this purpose, selected plants were used for the study of hepatoprotective activity.

KEYWORDS: Extracts, Ethanol, Hepatoprotective

INTRODUCTION

Plant based drugs are being increasingly preferred in medical science. The curative parts of a medicinal plant are not simply its woody stem or its leaves, but the number of chemical compounds (phytochemicals) produced and uses for its own growth and development. The therapeutic value and pharmacological action of a drug is due to the presence of certain chemical constituents such as carbohydrates, derivatives of carbohydrates, gums, mucilages, pectins, various forms of glycosides, tannins, phenolic compounds, lipids, fixed and volatile oils, resins, various kinds of alkaloids etc. These phytochemicals are of immense importance to mankind. Phytochemical investigation of plants is an interesting area of research, leading to the isolation of several new compounds. Though voluminous literature has accumulated on secondary products of plant, very little information is available on their presence and biosynthetic pathways in plants growing in arid zones. Knowledge of chemical constituents of plants is desirable, not only for the discovery of therapeutic agents, but also because such information may be of value in discovering new sources such as tannins, oils, gums, precursors for the synthesis of complex chemical substances etc. [1] In addition, knowledge of the chemical constituents of plants would be valuable in discovering the actual value of folkloric remedies. The health advantages of

plant-based medicines have had an influence on people all around the world, and they are also frequently more affordable than contemporary synthetic remedies in many nations. Despite the extensive experiences in use of medicinal plants in traditional medicine, scientific study and identification of active plant compounds and their effects can lead to the discovery of new therapeutic benefits and the production of nature-based products in the future. To achieve this purpose, selected plants were used for the study of hepatoprotective activity. [2,3]

EXPERIMENTAL WORK

Collection of Plant Drug

Leaves of *Butea Monosperma & Bauhinia Variegata* were collected from the local area of Bhopal. Collected plant drugs were identified and processed for further use.

Preparation of Plant Drug

The leaves were then washed thoroughly in distilled water and dried on a cloth to drain out excess water. Further drying of the leaves was done in the shade. The dried leaves were then ground into fine powder. Powder was then sieved through the sieve with mesh no. 150 to separate the unwanted residue and to get fine powder.

Extraction of Plant Drugs

The shade dried coarsely powdered plant material (250 gms) of leaves of *Butea Monosperma & Bauhinia Variegata* were loaded separately in Soxhlet apparatus and was extracted with petroleum ether and ethanol as solvent for 48 hour. After completion of extraction, the solvent was removed by evaporation. The extracts were dried using rotator evaporator. The residue was then stored in dessicator [4,5].

Pharmacological evaluation of Plant drug *Butea Monosperma & Bauhinia Variegata*

Procurement of animals and housing condition

Albino Wistar rats of either sex weighing around 100-150g were procured. All animals were housed in polypropylene cages in a temperature controlled animal house room at 24±1 °C temperature, 60±5% relative humidity and 12 hour light and 12 hour dark cycle. The animals were fed with pelleted feed with standard rat diet and tap water throughout the experiment. All animal experiment was carried out in accordance with the guidelines of CPCSEA and study was approved by the IAEC.

Grouping of animals

Each group contained 5 adult albino Wistar rats (100-150 g).

Group I received 0.1% CMC (10 ml/kg, p.o.).

Group II received only thioacetamide (300 mg/kg, i. p.) on 13th and 14th day.

Group III received silymarin (25 mg/ Kg, p.o.) from day 1 to day14.

Group IV received ethanolic extract of *Butea Monosperma* orally 200 mg/kg from 1 to 14 days.

Group V received ethanolic extract of *Bauhinia Variegata* orally 200 mg/kg from 1 to 14 day.

Hepatoprotective activity of plant drugs by Thioacetamide induced hepatotoxicity method

The total experimental duration was 15 days. On the 13^{th} and 14^{th} day, Group II-V received intraperitonial injection of TAA 300 mg/kg body weight in physiological saline at 24 h interval only. Blood samples were collected in heparinized tubes and plasma was separated by centrifugation. Effect of *Butea Monosperma & Bauhinia Variegata* on liver SGPT, SGOT, Lipid peroxidation was evaluated for the

assessment of hepatoproetective effects. Thioacetamide (TAA) was given to rats intraperitoneally 300 mg/kg body weight on 13th and 14th day. [6,7]

RESULTS AND DISCUSSION

Findings of hepatoprotective activity of plant drugs

Effect of ethanolic extract of both the plants *Butea Monosperma* & *Bauhinia Variegata* were observed and recorded in table 1,2,3.

Table 1: Effect of ethanolic extract *Butea Monosperma* & *Bauhinia Variegata* on SGPT

S.N.	Groups	SGPT (IU/L)
1	Normal control	82.25±2.20
2	Experimental control	187.20±1.25
3	Standard Drug (Silymarin)	108.20±2.20
4	Ethanolic extract *Butea Monosperma*	148.25±1.50
5	Ethanolic extract *Bauhinia Variegata*	156.15±2.20

Table 2: Effect of ethanolic extract *Butea Monosperma* & *Bauhinia Variegata* on SGOT

S.N.	Groups	SGOT (IU/L)
1	Normal control	74.10±2.10
2	Experimental control	172.20±2.25
3	Standard Drug (Silymarin)	98.20±1.20
4	Ethanolic extract *Butea Monosperma*	126.25±2.50
5	Ethanolic extract *Bauhinia Variegata*	140.10±1.25

Table 3: Effect of ethanolic extract *Butea Monosperma & Bauhinia Variegata* on Lipid peroxidation

S.N.	Groups	Lipid Peroxidation (nmol/gm)
1	Normal control	30.55±1.20
2	Experimental control	101.20±1.20
3	Standard Drug (Silymarin)	55.10±2.15
4	Ethanolic extract *Butea Monosperma*	72.20±2.50
5	Ethanolic extract *Bauhinia Variegata*	74.15±2.10

CONCLUSION

On the basis of result obtained it was concludes that ethanolic extract of leaves of *Butea Monosperma & Bauhinia Variegata* having hepatoprotective potential. The presence of active constituents may be responsible for this activity. Further isolation and evaluation of active constituent from selected plant drug *Butea Monosperma & Bauhinia Variegata* is needed for establishment of mechanism responsible for hepatoprotective activity.

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