Online
irE-ISSN 2277–4149

International Research Journal of Pharmaceutical and Applied Sciences (IRJPAS)

Available online at **www.irjpas.com**

PRELIMINARY PHYTOCHEMICAL ANALYSIS AND ANALGESIC ACTIVITY OF ROOT EXTRACTS OF *BOSWELLIA OVALIFOLIOLATA* Bal. & Henry

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ABSTRACT
Medicinal plants play a vital role in health care. There are many valuable medicinal plants which are unique in action. *Boswellia ovalifoliolata* Bal. & Henry (Family: Burseraceae) roots were extracted in Methanol and Chloroform to investigate analgesic activity using hot plate method. Phytochemical screening of the extract revealed the presence of alkaloids, flavonoids, saponins, steroids and tannins. The extracts were found to have significant analgesic activity. The results showed that the extract contains some pharmacologically active principles and lend pharmacological credence to the ethnomedical use of the plant in the management of analgesic conditions

KEY WORDS: *Boswellia ovalifoliolata* Bal. & Henry, analgesic, acute toxicity.

INTRODUCTION

Medicines from herbal sources have got spontaneous importance while considering the side effects of the synthetic and chemical drugs. World Health Organization (WHO) has reported that around 21,000 plants have been used for medicinal purpose in the world. About 500 higher species have been thoroughly investigated as potential source of new drugs. *Boswellia ovalifoliolata* Bal. & Henry is deciduous medium sized tree. Leaves are imparipinnate. The plant is over exploited for its medicinal uses. The fresh leave juice is used to prevent throat ulcers. From the studies it is quite apparent that the Chloroform extract possess significant analgesic activity [1].

MATERIALS & METHODS

Plant Material

Roots of *Boswellia ovalifoliolata* Bal. & Henry were collected from Tirumala Hills, Tirupathi, and A.P. It was identified and authenticated by Dr. K. MadhavaChetty, Department of Botany, S.V University. All the solvents of LR Grade were procured from SVR Laboratory.

Preparation of Plant Extract

Root of *Boswellia ovalifoliolata* was collected, washed with distilled water and dried at room temperature.

It is pulverized by a mechanical grinder and sieved. Powdered material was extracted with Chloroform and Methanol through maceration process over a period of 7 days. The extract was concentrated and dried. The extract was stored in air tight container for further studies.

Phytochemical Studies

The phyto constituents such as Alkaloids, Flavonoids, etc. were screened according to the common phytochemical methods described by Harborne (1998).

Acute Toxicity

The acute toxicity of *Boswellia ovalifoliolata* extracts were carried out with Anurag Group of Institutions as per OECD 423 guidelines (Acute toxic class method). Animals were randomly distributed into 4 groups containing 3 animals for group. Four fixed doses of Methanol and Chloroform extracts of plant (5, 50, 300, 2000 mg/Kg body weight) were administered orally to female Albino mice.

Animals were observed individually after dosing during the first 30 minutes, periodically during the first 24 hours with special attention. Rats were weighed periodically for the observation for any change in the morphological behavior.

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Analgesic Activity

Hot Plate Method

Process

Swiss Albino mice either sex weighing 25 – 30 g were selected for the study and divided into 4 groups as below with 6 in each. Animals in the treatment group were topically treated with plant extracts for 7 days.

Animals divided in following groups (n=6)

GROUP 1: negative control (saline)

GROUP 2: Standard (Morphine 4mg/kg i.p.)

GROUP 3: B.O-CHCL3 (400mg/kg p.o)

GROUP 4: B.O-Methanol (400mg/kg p.o)

Hot Plate Assay

The hot plate test is performed using an electronically controlled hot plate (VJ Instruments) heated to 55°C (±0.1°C). The cutoff time is 15 s. The latency until rats showed first signs of discomfort (hind paw lifting, hind paw licking, or jumping) is recorded.

Statistical Analysis

Results were expressed as mean ± SEM. Differences among data were determined using two ways ANOVA followed by Bonferronni's Multiple Comparison Test (Graph Pad Prism software, version 5.01). $p < 0.05$ was considered statistically significant.

RESULTS

Preliminary Phytochemical Screening

Preliminary phytochemical screening of different extracts showed the presence of Alkaloids, Glycosides, Steroids, Saponins, Phenolic compounds, Flavonoids, Carbohydrates, and Proteins. These are shown in table 1.

Acute Toxicity

In this study, no mortality occurred within 24 hours with the 4 doses of plant extracts. The LD50 was therefore greater than 2000mg/kg, p.o. in mice. The results of the acute toxicity study indicate that the extracts are fairly nontoxic up to 2000mg/kg, p.o. Hence $1/5^{th}$ dose is selected for the study.

Analgesic Activity

The hot plate nociception model was used as a first-line signal- finding model for evaluating the analgesic potential of test compounds. In this model, vehicle-treated mice began exhibiting paw-licking behaviors at 2.63±0.22 seconds after exposure to the hot plate. Whereas oral treatment with plant extract significantly and dose dependently delayed the paw licking response (B.O-CHCL3 - 10.13±0.36) which is comparable with standard treatment (14.30±0.54). Hence it is concluded that given plant extracts possess strong analgesic activity.

DISCUSSION & CONCLUSION

In the present study, the potential analgesic effect of the methanol and chloroform extracts of *Boswellia ovalifoliolata* Ball. & Henry was investigated. The results indicates that the oral administration of chloroform extract of the plant exhibited significant analgesic effect and dose dependently delayed the paw licking response (B.O-CHCL3 - 10.13±0.36) which is comparable with standard treatment (14.30±0.54).

On the other hand, the extracts of *Boswellia ovalifoliolata* Ball. & Henry contains many phytochemical components. These compounds have potentially significant applications against human pathogens.

Table 1. Preliminary Phytochemical Analysis of the root of *Boswellia ovalifoliolata* Bal. & Henry

Phyto-constituent	Methanolic Extract	Chloroform Extract
Alkaloids	+	+
Glycosides	+	+
Steroids/Triterpenoids	+	+
Saponins	+	+
Phenolic Compounds	+	-
Flavonoids	-	+
Carbohydrates	+	-
Proteins	+	-

Table 2. Effect of treatments on the Paw with drawl time of Mice submitted to Hot plate test

Groups	Response Latency In Sec				
	0 Min	30 Min	60 Min	90 Min	120 Min
Control	2.81±0.20	2.75±0.22	2.94±0.15	2.75±0.19	2.63±0.22
Standard(Morphine)	2.47±0.20	6.64±0.32 [a]	9.27±0.30 [a]	11.42±0.48[a]	14.30±0.54 [a]
B.O-CHCL3	2.95±0.15	5.68±0.46[a]	7.61±0.44[a]	8.76±0.42[a]	10.13±0.36[a]
B.O-Methanol	3.45±0.40	3.23±0.39	3.28±0.13	2.85±0.22	3.13±0.25

Two way ANOVA followed by Bonferroni's Multiple Comparison Test, values are mean ± SEM, n=6;[a] p<0.001----when compared to control group

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