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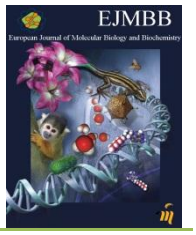

SEDATIVE EFFECT OF *LAWSONIA INERMIS* ROOT EXTRACT ON PHENOBARBITONE INDUCED SLEEPING TIME IN MICE

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ABSTRACT
Lawsonia inermis is a glabrous shrub or small tree, cultivated for its leaves although stem bark, roots, flowers and seeds have also been used in traditional medicine. Traditionally almost all the parts of the plant were used in the various ailments of CNS. Current study was conducted to evaluate the sedative property of ethanolic root extract of *Lawsonia inermis* on phenobarbitone induced sleeping time in mice. Swiss albino mice were divided in to four groups of 6 animals each. Group I served as control, received vehicle (0.1% CMC) and group II, received Chlorpromazine (5mg/kg). Group III and IV were administered orally with 200 and 400mg/kg of ethanolic root extract of *Lawsonia inermis* respectively. After 30 minutes of test drug administration, Phenobarbitone sodium (40mg/kg) was administered intra-peritoneal to all groups of animals. The time between the loss and recovery of the righting reflex was taken as the sleeping time. The results showed that, Both the doses 200mg/kg ($P<0.05$) and 400mg/kg ($P<0.01$) of ethanolic root extract of *Lawsonia inermis* significantly increased the phenobarbitone induced sleeping time when compared to control group. From the results, it may conclude that, the ethanolic root extract of *Lawsonia inermis* produced sedative effect in mice.

INTRODUCTION

The application of medicinal plants for treatment of various illnesses dates back to thousands of years. In ancient medication therapy the medicinal plants were used as decoctions, crude extracts, powders and other formulations [1]. A large proportion of people from developing countries in worldwide still depend on plants as a source of medication.

Genus Lawsonia bears one species, *Lawsonia inermis (*synonyms: *alba* and *spinosa* belonging to family Lythraceae. It is a biennial dicotyledonous herbaceous shrub. A native of North Africa and South-West Asia, the plant is now widely cultivated throughout the tropics as an ornamental and dye plant. A much branched glabrous shrub or small tree (2 to 6 m in height). Leaves are small, opposite in arrangement along the branches, sub-sessile, about 1.5 to 5 cm long, 0.5 to 2 cm wide, greenish brown to dull green, elliptic to broadly lanceolate with entire margin, petiole short and glabrous and acute or obtuse apex with tapering base. Flowers are small, about 1 cm across, numerous, fragrant, white or rose coloured with four crumbled petals. Fruit is a small brown coloured round capsule. Fruit opens irregularly and splits into four sections at maturity and is many seeded [2,3]. *Lawsonia inermis* has been used cosmetically and medicinally for over 9,000 years. Traditionally in India, *Lawsonia inermis* leaves paste is applied to hands and feet, which symbolizes fertility and produced cooling effect. *Lawsonia inermis* leaves, flowers, seeds, stem bark and roots are used in traditional medicine to treat a variety of ailments as rheumatoid arthritis, headache, ulcers, diarrheoa, leprosy,

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fever, leucorrhoea, diabetes, cardiac disease, and hepatoprotective [4]. The leaves of *Lawsonia inermis* is used for alleviating jaundice, skin diseases, venereal diseases, smallpox and spermatorrhoea. An infusion of the flowers is a valuable application to bruises and used as an emmenagogue. The seeds were effective in dysentery and liver disorders. The bark is applied in the form of a decoction to burns and scalds. It is given internally in a variety of affections, such as jaundice, enlargement of the spleen, calculus, as an alternative in leprosy and obstinate skin affections. Root is considered as a potent medicine for gonorrhea, herpes infection, hysteria and nervous disorders.

Although this plant has been widely used traditionally in various symptoms and diseases, however few pharmacological studies such as, Immunomodulatory [5], antidiabetic [6], antioxidant [7], hepatoprotective [8], analgesic [9], anti-inflammatory [10], wound healing [11] etc have been reported. Current study was conducted to evaluate the influence of *Lawsonia inermis* root extract on CNS by evaluating its effect on phenobarbitone induced sleeing time in mice

MATERIALS & METHODS

Plant Collection

The roots of *Lawsonia inermis* was collected from the out skirts of Pondicherry. The plant was identified as *Lawsonia inermis* and authenticated by Scientist 'F' Botanical survey of India, Southern Regional Centre, Tamilnadu Agriculture University, Coimbatore. The Voucher specimen (BSI/SRC/14/46/15-16/Tech - 55) has been deposited in department for further references.

Preparation of Extract

The collected roots of *Lawsonia inermis* was washed and shade dried. The dried roots were pulverized to get coarse powder using mechanical blender. The coarsely powdered plant material was then subjected to extraction by a maceration process using 90% ethanol as a solvent at room temperature for 7 days with occasional shaking. The ethanolic extract was concentrated to dry. The collected extract was stored in desiccators and used for further pharmacological study.

Animals

Healthy adult Swiss albino mice of both sex, weighing about 20 -25 g were obtained from the animal house of Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry. The rats of either sex were isolated and housed in separate cages during the course of experimental period and kept them at room temperature (24± 2°C) with a 12 : 12 h light/dark cycle. The animals were fed with standard pellet diet and provided water *ad libitum.* All the procedures and protocols were reviewed and approved by the Institutional Animal Ethics Committee.

Phenobarbitone Induced Sleeping Time

Healthy albino mice weighing between 20-25gms were fasted for 24 hrs before the experiment and were divided into 4 groups of 6 animals each. Group I was served as normal control, received 0.1% w/v of Carboxy Methyl Cellulose (CMC). Group II was served as reference control, received Chlorpromazine (5 mg/kg). Group III and IV received 200 and 400 mg/kg of ethanolic root extract of *Lawsonia inermis* respectively. All the test drugs were administered orally by suspending in 0.1% CMC solution. After 30 minutes of test drug administration, Phenobarbitone sodium (40mg/kg) was administered intra-peritoneal to all groups of animals. The time between the loss and recovery of the righting reflex was taken as the sleeping time [12].

Statistical Analysis

Results were expressed as mean ± SEM. The data were analyzed by using one way analysis of variance (ANOVA) followed by Dunnet's '*t*' test using GraphPad version 3. P values < 0.05 were considered as significant.

RESULT

The effect of ethanolic root extract of *Lawsonia inermis* was studied on phenobarbitone induced sleeping time mice and the results were shown on table I. Chlorpromazine was used as reference control. Two dose levels 200 and 400 mg/kg, of ethanolic root extract of *Lawsonia inermis* were used in the study. Chlorpromazine is CNS depressant drug, which significantly ($P<0.001$) potentiates the phenobarbitone induced sleeping time compared to control groups. Both the doses 200mg/kg ($P<0.05$) and 400mg/kg ($P<0.01$) of ethanolic root extract of *Lawsonia inermis* significantly increased the phenobarbitone induced sleeping time when compared to control group and the effects were in dose dependent manner .

Table 1. Effect of ethanolic root extract of *Lawsonia inermis* on phenobarbitone sodium induced sleeping time in mice

S.No	Drug Treatment	Sleeping Time (Minutes)
1	Group I - 0.1% CMC (10ml/kg)	36.25±2.69
2	Group II - Chlorpromazine (5mg/kg)	69.82±4.77***
3	Group III - *Lawsonia inermis* (200mg/kg)	51.22±3.94*
4	Group IV - *Lawsonia inermis* (400mg/kg)	64.32±3.27**

Data's were expressed as Mean ± SEM (n=6)*P<0.05, ** P<0.01 and *** P<0.001 Vs Control (Group I)

CONCLUSION

The above study was conducted to prove the traditional claim of *Lawsonia inermis* for its CNS activity. The ethanolic extract was prepared using the roots of *Lawsonia inermis* and two dose (200 & 400mg/kg) levels were tested on phenobarbitone induced sleeping time in mice. Both the doses were significantly potentiated the sleeping time of phenobarbitone in mice and it may conclude that, the ethanolic root extract of *Lawsonia inermis* produced sedative effect in mice.

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CONFLICT OF INTEREST:
The authors declare that they have no conflict of interest.

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