

# Effectiveness of Lawsonia Inermis for Psychopharmacological Activity on Staircase in Nmri Mice

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## ABSTRACT

**Objective:** To evaluate the psychopharmacological activity of methanolic extract of Lawsonia inermis (Meli) in Albino mice.

**Study Design:** Observational study

**Place and Duration of Study:** This study was conducted at the Department of Pharmacology, Faculty of Pharmacy, Hamdard University, Karachi from January, 2014 to June, 2014.

**Materials and Methods:** The study was approved by the ethical review committee of the institute. Lawsonia inermis leaves were gathered from the botanical greenery enclosure of the Hamdard University premises their pharmacognostic details were authenticated from Eastern Medication Faculty of Hamdard University, Karachi. Albino mice (30-35g) of either sex were gotten from the creature place of Dr. HMI Institute of Pharmacy and Herbal Sciences, Hamdard University, Karachi. Psychopharmacological activity was studied by utilizing stair case test which is normally utilized as a part of rat for hostile to tension like conduct that is based comprises of setting local queasiness in an enclosed box with 5 steps.

Absolutely thirty six (N=36) were arbitrarily partitioned into six sets. For each of the model considered (n=6). The groups incorporate controls (vehicle) and standard medications (Diazepam, Buspirone, 1mg/kg) and three groups of Meli (50, 100 and 200 mg/kg).

**Results:** Meli dosage of 100mg/kg drastically (P<0.05, 0.01) augmented the number of steps up in the Stair case with peak activity procured at the dosage of 100mg/kg (37.8±4.2) seconds compared to control (6.3±2.2 Seconds). The extract at dosage of 100mg/kg notably (P<0.05, 0.01) accelerated the number of steps up with peak effect at the dosage of 100mg/kg (37.8±4.2) compared to control (6.3±2.2 seconds). The impact at this measurement was not quite different that of Diazepam (41.8±3.4 seconds).

**Conclusion:** Meli has explored anxiolytic effect because it possesses one or a mix of Phytoconstituents in the concentrate.

**Key Words:** Lawsonia inermis, Anxiety, Psychopharmacological activity, Mice

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## INTRODUCTION

Lawsonia inermis commonly known as Henna it is greatly fanned, deciduous, and glabrous, at some point spine scent bush or little tree with grayish chestnut bark, achieving a stature of 2.4-5 m. belongs to family Lythraceae. Henna, a customary item with religious affiliations, has been broadly utilized through the hundreds of years for medicinal and restorative purposes. Ethanopharmacological uses of Lawsonia inermis includes relieve unilateral, headache, ophthalmia, syphilitic, gynecological disorders, skin diseases and as antibacterial, antifungal, anti amoebiasis<sup>1</sup>.

Lawsonia inermis has been reported to possess antioxidant, anticorrosion, anti-inflammatory, analogues, antipyretic, ant parasite, antimicrobial, antibacterial, ant tumbrel activity, cytotoxic, hypoglycemic, hepatoprotective, protein glycation inhibitory, Trypsin inhibitory, wound healing activities<sup>2,3</sup>. Its antidepressant activity is already reported by Priyona, et al who had worked on hydro-alcoholic extract of this plant<sup>4</sup>. The literature also supported to have anti bacterial<sup>5</sup>, ant-fungal<sup>6</sup>, burn wound infections<sup>7</sup>, anti-oxidant<sup>8</sup>, immuno-modulator<sup>9</sup> and many others activates. In literature it is proposed that these CNS activities are due to the presence of phyto-chemical constituents 2 hydroxy naphtho quinone (Lawsonone), mannite, tannic acid, mucilage and Gallic acid<sup>10</sup>.

## MATERIALS AND METHODS

**Plant collection and Authentication:** The fresh plant leaves were harvested from Hamdard University Herbarium, Its pharmacognostic identification was

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taken from Faculty Eastern Medicine, Hamdard University. The plant was dried under shade.

**Extraction:** The dried leaves were converted into fine powder of weight 1000g. Then it was soaked for three days into 01 Lit of 50% methanol. The 45.12g Meli was obtained by processing in rotary evaporator in Pharmacology Laboratory of Hamdard University.

**Experimental analysis:** The study was conducted on Albino mice weighting 30-35 gram irrespective of sex, these were collected from Dr. HMI Institute of Pharmacy & Herbal Sciences, Hamdard University Karachi. In order to exclude the bias all animals were treated according to standard protocols and standard diet for 15 days then they were entered in study procedures. Moreover the ethics for animal trial were followed as well.

**Drugs and Chemicals:** Test medicine was Meli and control drug was Diazepam (Hoffmanla Roche, Switzerland), Buspirone.

**Experimental Design:** All the animals were randomly allocated to one of six groups. Total animals were 36, 06 per each group. The control group was treated with standard drugs (Diazepam) Buspirone 1mg/kg) while the three groups were studied with different Meli dosage as 50, 100 and 200mg/kg.

**Stair Case Test:** The equipment comprises of five steps amidst the case (2.5 X 2.5 X 2.5) joined with each other. The box was made up of glass plastic covered with all the four sides. The apparatus consists of placing and experimentally native mouse in an enclosed stair case and observed for 5 minutes. A step will consider to the climb if they were would place all 4 paws on the step. The mice were medicated with vehicle control (1ml distilled water P.O), diazepam and Buspirone (1mg/kg I.P) and (Meli 50, 100 and 200mg/kg I.P). Following thirty minutes, creatures were kept in the light and dark box.

## RESULTS

Student t test two tailed was applied as an analytical tool. The statistical findings revealed that Meli dose of 100 mg/kg has remarkable results as depicted by the p value as 0.05 and 0.01, The highest activity was seen at the dosage 100mg/kg ( $37.8 \pm 4.2$ ) seconds.

**Table No.1: Stair Case (number of steps up)**

Treatment	Dose mg /kg i.p	No. of steps up (seconds)
Control D/w	(1ml p.o.)	$6.3 \pm 2.2$
Meli	50	$31.6 \pm 2.6$
Meli	100	$37.8 \pm 4.2^*$
Meli	200	$31.6 \pm 5.6$
Diazepam	1	$41.8 \pm 3.4^*$
Buspirone	1	$31.5 \pm 3.2^*$

While in control cases the results were appeared on  $6.3 \pm 2.2$  (Table 1) The results achieved was drastically

different from diazepam as  $41.8 \pm 3.4$  sec. Figure 1 displayed the findings of all results.

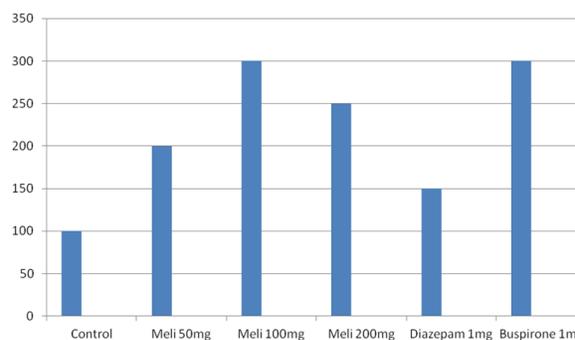


Figure No.1: Stair case activity (No. of steps up) Student t-test,  $P > 0.005$  ( $\eta = 6$ )

## DISCUSSION

In recent era the psycho pharmacist are facing a great trouble for prompt and efficacious treatment of anxiety disorders. The prevalence of anxiety is continuously raising and becomes an alarming problem. It is documented that roughly one quarter of individuals will encounter serious manifestations and debilitate of anxiety related problems as a result of uneasiness issue eventually amid their lifetime. The immediate and backhanded expenses to the wellbeing administration and economy are significant. In spite of the fact that persons who experience the psychopathologies of uneasiness issue are high buyers of a wide range of wellbeing administrations, just a minority get particular help<sup>11,12</sup>. The stair case test is in light of a methodology evasion clash to record the rearing when the mice rose and its hind legs and the number of steps descended and the numbers of climbing to each step was counted. The test was invented by Crawley et al, who applied it in mice's and analyzed that psychopharmacological medicines enhanced the total steps of climbing in the stair case. Few studies reported that Later Lawsonia inermis have anti-depressant activities<sup>4</sup>. In 2014 the Meli antianxiolytic activity was reported by light and dark activity method<sup>13</sup>. However this is the first time that the psychopharmacological activity is confirmed by staircase method. In present study, Meli was tried for psychopharmacological effect by utilizing stair case test. The remarkable increment in the total steps up by Meli (100 mg/kg, ip) shows the confirmation of psychopharmacological effect which was identical to standard psychopharmacological medication Buspirone. This study outcomes are in concurrence with past studies led which proposed that Lawsonia inermis has tremendous results against nervousness and anxiety in mice utilizing behavior despair test in addition to elevated plus maze test separately. The psychopharmacological activity of Lawsonia inermis distinguished in this study may be because of the vicinity of one or a

mix of Phytoconstituents present in the concentrate, for example, alkaloids (anthraquinones), tannins (phlobatannins), glycosides and flavonoids. Previous researchers proposed that Flavonoids have been indicated to have particular liking for the benzodiazepine tying site with a wide range of CNS impacts<sup>14</sup>. There is in any case, a requirement for standard bioassay guided fractionation is obliged to focus dynamic principles lies in *Lawsonia inermis* plant.

## CONCLUSION

Based on the results revealed from this study it can be concluded that *Lawsonia inermis* shows Psychopharmacological activity in mice, subsequently this plant is conceivable new intense regular wellspring of hostile to anti-anxiety operators and could be helpful in treatment of nervousness issue. Be that as it may, research center examinations are obliged to disconnect, distinguish and describe the compound principle(s) in charge of the watched natural property of the concentrate and the exact instrument of activity.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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