Phytochemical Study and Analgesic Activity of *Jasminum Sambac*[1]

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ABSTRACT

The study was aimed at evaluating the Analgesic activity of different extract of leaves and roots of jasminum sambac. The dried roots and leaves of jasminum sambac were extracted with ethanol. Extracts of Jasminum sambac Linn (Oleaceae) were screened for analgesic activity by Tail flick method in comparison with standard Buprenorphine. The root and leaf extracts were studied by observing tail flick at different time intervals. These results suggest that ethanoic leaf extract of leaves at 200 mg/kg body weight is shown more potent analgesic effect compare to root extract of jasminum sambac.

Keywords: *Jasminum sambac Linn; Tail flick method; Buprenorphine; Analgesic activity.*

INTRODUCTION:

Ayurveda the knowledge of life science bestowed health and longevity in the form of preventive and curative measures. These ancient systems play an important role even in the modern health care of developed countries and at least 119 chemical substances, derived from 90 plant species, can be considered important drugs[1-2]

According to the world health organization, medicinal plants are the best source to obtain a variety of newer herbal drugs. About 80% of individuals from developed countries use traditional medicine, which has compounds derived from medicinal plants. Therefore, such plants should be investigated to better understand their properties, safety and efficacy.

Jasmines are an important group of flowering plants. They are widely cultivated and esteemed for their attractive fragrant flowers. This genus belongs to the family Oleaceae. Moreover, different parts of the plant such as the leaf, stem, bark, and roots are very useful and important in pharmaceutical industries .All contain manitol. *Jasminum sambac* has diuretic and emmenagogue properties. The fresh juice of leaves are applied to corns, and the leaves are chewed and used in the treatment of ulcerations of the mouth .The leaves contain resin, salicylic acid, and an alkaloid named jasmine[3-6].

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MATERIALS AND METHODS

Drugs and chemicals

The following drugs were used: Buprenorphine, Ethanol was obtained from Sigma Chemical Co. (India). All drugs were prepared immediately before use. All other used reagents and solvents were of analytical grade.

Plant material

The whole plants of *Jasminum sambac Linn. leaves* (Oleaceae) were collected and authenticated by KCP science college, Botany Dept. Vijayapur, Karnataka, has been preserved in Department for the future reference.

Extract preparation

The whole plant (198 g) of *Jasminum sambac Linn. leaves* was air dried (7 days at 40˚C) and powdered. The powdered plant was exhaustively extracted with ethanol in soxhlet apparatus and the extract was concentrated in vacuum to yield 20 g of residue.

Phytochemical screening

On preliminary screening, the ethanolic extract of *Jasminum sambac Linn. leaves* showed positive reaction for alkaloid, flavonoids, tannins and saponins.

Animals

The study was conducted on Albino Wistar rats (150±10 g) of either sex Animals were obtained from the BLDE SSM College of Pharmacy and Research Center, Vijayapura. Karnataka. Animals were fed with commercially available standard rat pelleted feed (M/s Pranav Agro Industries Ltd., India) under the trade name Amrut rat/mice feed and water was provided *ad libitum*.The rats were housed under conditions of controlled temperature (25±2 ˚C) and were acclimatized to 12-h light: 12-h dark cycles. Experimental animals were used after obtaining prior permission and handled according to the University and institutional legislation as regulated by the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA), Ministry of Social Justice and Empowerment, Government of India.

The roots and leaves of *Jasminum sambac* was collected from the local botanical garden. The plant material was taxonomically identified and authenticated by The plant materials were dried under shade, sliced into small pieces, pulverized using a mechanical blender and passed through 40 mesh sieve and stored in an airtight container.

EXPERIMENTAL PROTOCOL

Analgesic activity:

Analgesic activity of methanolic extract of *Jasminum sambac* was evaluated by using tail flick and acetic acid writhing method

Tail flick method: [63]

Albino rats of either sex were fasted for 12 hours. Basal reaction time to radiant heat was taken by placing tip (last 1-2 centimeters) of the tail on nicrome wire of analgesiometer . Tail withdrawal from the heat is taken as end point. Normal reaction time was 3-4 seconds. Animals failing to withdraw their tail within 3-4 seconds were discarded. Cut off time was taken as 10 seconds to avoid excessive damage to the tail. Animals were divided into 4 groups (each containing 6 rats). Group I (Control) received 2 ml of distilled water containing 2%v/vTween 80 orally. Group II

(Standard) received Buprenorphine (0.05 mg/kg sub cutaneously)) 30 minutes before exposure to radiant heat. Group III and IV received methanolic extract of root of Jasminum sambac (Linn) Aiton in the dose of 200 and 400 mg/kg orally respectively 60 minutes before exposure to radian heat. Reaction time was taken at 15, 30, 60 and 90 minutes (Davies O L, 1946).

Statistical analysis

The data were expressed in Mean ± SEM. The results were analysed statistically by ONE WAY ANOVA followed by Dunntes 't' test using SPSS software 13.0 version. The difference was considered significant if *p< 0.05.

RESULTS

Effect of ethanolic extract of Jasminum sambac Linn. leaves on analgesic activity. In tail flick method, Buprenorphine showed increase in reaction time at 15 minutes and maximum reaction time at 90 minutes. EEJS leaves and root at the dose of 100 mg/kg displayed no significant analgesic effect. But with dose 200 mg/kg showed maximum increase in reaction time at 60 minutes which was statistically significant (Probability < 0.05).

CONCLUSION

In conclusion, our data shows that ethanolic extract of *Jasminum sambac Linn. leaves* has an obvious analgesic effect. The tail immersion method involves the assessment of thermal stimuli and the fluctuation in the reaction time which is an important parameter for evaluating central anti-nociceptive activity. This test is able to differentiate between central and peripheral analgesics**.** Treatment with J.sambac had exhibited significant increase in pain threshold which suggest the involvement of central pain pathways. Pain is centrally modulated via several mechanisms such as opiate, dopaminergic, descending nor-adrenergic and serotonergic. The analgesic activity might be due to central mechanism by modulating these receptor networks. [80]

TABLE: 1.1. Qualitative phytochemical analysis of various extracts of *Jasminum sambac*

Type of Constituent	**Root**	**Leaves**
Alkaloids	-	-
Phenolic compounds and tannins	-	-
Flavonoids	-	+ +
Saponins	-	+
Steroids	+ +	+ + +
Triterpenoids	+ +	+ + +
Proteins	-	+ +
Carbohydrates	-	+
Glycosides	-	-

Table: 1.2 Analgesic effect of EEJS leaf and roots on tail flick method

Groups(Drug) (n=6)	Dose	Before Drug Administration	No. of tail flicking after Drug Administration			
			15 min	30 min	60 min	90 min
Control	2 ml	3.35±0.13	3.13±0.17	3.23±0.17	3.31±0.25	3.28±0.27
Buprenorphine	0.05 mg/kg	3.31±0.38	5.80±0.22**	7.05±0.75**	8.05±0.5**	8.66±0.3**
EEJS leaves	100 mg/kg	3.65±0.13	4.54±0.38	5.12±0.41	6.0±0.25	6.54±0.32
EEJS leaves	200 mg/kg	3.18±0.23	5.76±0.12*	5.92±0.54*	6.43±0.43*	7.32±0.43*
EEJS roots	100 mg/kg	3.14±0.12	4.35±0.16	4.75±0.52	5.32±0.12	6.12±0.32
EEJS roots	200 mg/kg	3.28±0.25	4.98±0.16*	5.12±0.54*	6.34±0.51*	6.87±0.32*

* P < 0.05, ** P < 0.01, *** P < 0.001 Mean±SD

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