

Strobilanthes Kunthianus: An Overview

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Abstract: The use of herbal drugs in developing newer drug technology has increased to a greater extent. *Strobilanthes* species are widely spread in Asia and are endemic to Western Ghats India. They are known to have many traditional uses such as anti-inflammatory, anti-oxidant, anti-microbial, anti-osteoarthritis etc. *Strobilanthes kunthianus* is widely distributed in the grassland of Nilgiri hills and blooms once in 14 years and they are also known to have many traditional uses. This review focuses on basic studies such as phytochemical screening and pharmacological effect of plant.

Keywords: *Strobilanthes kunthiana*, anti-inflammatory, anti-oxidant, anti-microbial, phytochemical screening

I. INTRODUCTION

Herbal drugs are used widely in newer drug development technology. The huge structural variety, advanced techniques for isolation, characterisation of the structure have led to the synthesis of drugs from plants.⁽¹⁾ Nowadays plant-based drug development has dominated synthetic drug development to an instance. Isolation of medicinal compounds from the plant has greater influence and led to the development of newer drugs and modern therapies.

Strobilanthes kunthianus is widely distributed in the grassland of Western Ghats of India and blooms every 12 years. The name 'blue mountain' which is the synonym of Nilgiri hills is due to the presence of purplish flowers of *S.kunthianus* Nilgiri itself has 150 species of *Strobilanthes*.⁽²⁾ *Strobilanthes* species are known to have many medicinal properties such as anti-inflammatory, anti-osteoarthritis, analgesic, anti-oxidant, hepatoprotective, anti-fungal, anti-giardial, and anti-microbial and protection against UV rays.⁽³⁾

II. SYNONYM^(3,4)

Phleophyllum kunthianus
Strobilanthes kunthianus
Strobilanthes nilgirianthisis
Ruellia kunthianus

III. COMMON NAME⁽⁴⁾

Tamil: neelakurinji
Malayalam: neelakurinji
Hindi: kurinji

IV. TAXONOMIC TREE⁽⁴⁾

Kingdom: Plantae
Sub-kingdom: Phanerogamia
Division: Angiospermia
Class: Eudicots
Sub-class: Asterids

Order: Lamiales
Family: Acanthaceae
Genus: *Strobilanthes*
Botanical name: *Strobilanthes kunthianus* Nees T Anderson

V. DISTRIBUTION⁽⁴⁾

Found in tropical south and south East Asia, more than 300 species in Asian countries
Endemic to western ghats, India: Kerala, Tamil nadu & Karnataka

VI. DESCRIPTION⁽³⁾

It is a small shrub of height 30-60 cm & in some conditions may grow upto 2 m
Stem: numerous, erect, prominent nodes, quadrangular
Leaves: elliptic-ovate, 5×2.5 cm, acute at apex and base, margin-crenate-serrate, secondary veins upto 9 pairs, petioles 5mm long
Inflorescences: spike, 8cm long, uninterrupted, branched sometimes, support by leaf bract
Flower: corolla-tubular ventricose expanding at the base, inside hairy, 5-lobes, 2-stamens, 7mm long filament, ovary-hairy at tip & glabrous, style-length 1.5 cm, capsule-1.2 cm long, oblong, 4 seeded



Figure 1: *Strobilanthes kunthianus*

VII. PHYTOCHEMICAL PROFILE⁽³⁾

The preliminary phytochemical screening by successive solvent extraction was made on stem and root. Solvents used

were Pet. ether, chloroform, ethyl acetate & methanol. Phenolic compound, steroids, and triterpenoids were present in pet. ether and chloroform extract of root and stem. Successive methanolic and ethyl acetate extract of root contained flavonoids, phenolics & glycosides, while in the stem it showed phenolics, glycosides & saponins.

VIII. PHARMACOLOGICAL EFFECT

8.1 Anti-Inflammatory Activity ⁽²⁾

8.1.1 Carrageenan induced paw edema

In carrageenan-induced paw edema initial volume of the hind paw of the rat was calculated with a plethysmometer. The rat was grouped into control & test groups. The control gets the only vehicle. Here, carrageenan in saline (1% 0.1ml/rat) was injected subcutaneously on the right hind paw. The test group was treated with methanolic extract of flowers, stems, roots and leaves. At an interval of 1h, 2h & 3h the paw volume was measured & percentage increase in the volume of paw between test and percentage inhibition was found to be increasing with time and methanolic flower extract has shown percentage inhibition of 21.70 ± 1.17 to 40.50 ± 0.36 & 30.82 ± 0.63 to 50.76 ± 0.66 at dose 100 & 200mg/kg at 1-3 hour interval. Ibuprofen was used as standard.

Treatment	Dose (Mg/kg)	1h	2h	3h
		%inhibition	%inhibition	%inhibition
Control	-	-	-	-
Ibuprofen	100	43.79 ± 1.71	65.62 ± 0.81	71.69 ± 0.84
Crude flower extract	100	24.55 ± 1.50	38.10 ± 0.72	42.70 ± 0.82
	200	45.50 ± 1.25	56.30 ± 0.84	58.90 ± 0.94
Crude root extract	100	21.10 ± 1.70	27.27 ± 0.36	38.59 ± 1.14
	200	33.43 ± 1.70	42.32 ± 1.02	47.04 ± 0.46
Crude stem extract	100	20.61 ± 1.41	24.43 ± 0.57	31.74 ± 1.08
	200	35.41 ± 2.69	34.37 ± 0.73	38.59 ± 0.82
Crude leaves extract	100	16.67 ± 1.78	19.88 ± 1.46	29.91 ± 0.65
	200	26.53 ± 0.91	30.39 ± 0.81	42.24 ± 0.65

Table: 1 Anti-inflammatory activity of crude methanolic extract of *S.kunthianus* in carrageenan induced paw edema

8.2 Analgesic Activity ⁽²⁾

8.2.1 Hot Plate Method

Eddy's hot plate method was used. The temperature was set at $55 \pm 0.5^\circ\text{C}$ & treated rats were positioned on a plate. The reaction time of rats to respond to heat was noted. A response may be paw licking, jumping, or paw withdrawing. This was tested at 0, 30, 60, 90 & 120 min after treating with extract orally. Methanolic extract of leaf, flower, stem, and root was used among which methanolic flower extract

Shown more potent activity. The percentage protection was 60.96 to 173.10% at 30 to 90 minutes at dose 100mg/kg & 112.92 to 233.3% at 200mg/kg

Treatment	Dose (Mg/kg)	%potency				
		0 min	30 min	60 min	90 min	120 min
Control	-	-	-	-	-	-
Ibuprofen	100	0	199.43	242.43	287.43	272.95
Crude flower extract	100	0	60.96	135.59	173.10	169.40
	200	0	112.92	194.07	233.30	220.77
Crude root extract	100	0	37.08	75.42	115.50	114.48
	200	0	84.57	172.88	194.15	190.44
Crude stem extract	100	0	14.61	62.43	95.91	91.80
	200	0	57.02	127.12	144.15	152.46
Crude leaves extract	100	0	11.24	48.59	79.24	80.87
	200	0	48.60	101.41	128.36	120.77

Table: 2 Analgesic activity of crude methanolic extract of *S.kunthianus* by hot plate method

IX. CONCLUSION

Understanding and characterising the medicinal properties of herbal plants will help in the development of newer compounds and newer isolation techniques. This will help in the synthesis of active compounds from plants synthetically.

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