

A Review Article for Medicinal uses of *Justicia wynaadensis*

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ABSTRACT: Common names for *Justicia wynaadensis* include Maddu toppu and Aati toppu. It is a member of the Acanthaceae family. It is a short, branching shrub with a thin, smooth, terete stem that is 2-3 metres long. 5–10 cm long, elliptic–lance–shaped, long pointed, base narrow, with 6–8 pairs of veins, oppositely arranged leaves. The medicinal uses of *Justicia wynaadensis* include antibacterial, anti-inflammatory, antioxidant, antifungal, anticancer, and anti-diabetic properties. Using *Justicia wynaadensis* as a home remedy, we can maintain our health and avoid illness. *Justicia wynaadensis* contains polyphenols and flavonoids that support healthy blood pressure, blood sugar levels, and skin. The naturally occurring phenolic molecule is crucial for both preventing and treating cancer. This review article may discuss about the many different medicinal uses of *Justicia Wynaadensis*.

Keywords: *Justicia wynaadensis*, anti-oxidants, anti-cancer, anti-diabetic, anti-asthmatic etc.

I. INTRODUCTION:

Common names for *Justicia wynaadensis* include Maddu toppu and Aati toppu. It is a belong to family Acanthaceae⁽¹⁾. It is a short, branching shrub with a thin, smooth, terete stem that is 2-3 metres long. 5–10 cm long, elliptic–lance–shaped, long pointed, base narrow, with 6–8 pairs of veins, oppositely arranged leaves. On stems that are 1-2 cm long, leaves are carried. Flowers are produced in pairs on axillary and terminal, thin, 5–10 cm long, drooping spikes. The rachis is glabrous and occasionally branching. Flowers in distant pairs; bracts 3 x 1 mm; corolla 12 mm; throat hairy; ovary glabrous. The seed is obovoid, oblique, minutely reglose, and dark brown in colour. The capsule is 17mm long and pubescent. The medical benefits of *Justicia wynaadensis* include antibacterial, anti-inflammatory, antioxidant, antifungal, anticancer, and anti-diabetic properties.

Scientific Classification:

Kingdom: Plantae

Division : Tracheophyta

Order: Lamiales

Family: Acanthaceae

Sub family: Acanthoideae

Tribe: Justiceae

Genus: *Justicia*

Species: *Justicia wynaadensis*



Fig. 1: *Justicia wynaadensis* Heyne., (Das et. al.,)

According to scientific categorization, *Justicia wynaadensis* is indigenous to the Western Ghats⁽²⁾, which stretch from South Canara (Kodagu) to Wynaad, East Nilgiris, and South Malabar Hills in South India. It is found up to 3000 feet in evergreen forests and on waste lands. Since ancient times, it has been customary to wait until the monsoon season, known as "ashada maasa" or "aati maasa," in the months of July and August. People create and eat this delectable dish with *Justicia wynaadensis*' aqueous extract (juice). When harvested on the 17th day, the plant is thought to possess its greatest therapeutic potential. The plant releases a flavour and perfume that are pleasant. Juice is extracted and boiled with water and different types of tasty delicious desserts are prepared. It is stated that a plant develops a new medical component every day, and after 18 days⁽³⁾, the plant would have 18 distinct medicinal components. People drink this to live a healthy, happy life all year long and to build their immune systems. Ethanopharmacological research in the Kodagu District has shown traditional uses of plants for immunity and asthma. People of the

Karuchair tribes of Tirunelli Forest, Wayanad District, Kerala, apply the plant externally to rheumatic swellings.

Medicinal Properties in different diseases:

Antibacterial activity: Dsouza Dorin et. al., Chloroform fraction was found to be more potent when compared with other n-Hexane Fraction, Ethyl acetate Fraction and Methanol-water Fractions. It had been observed maximum activity against *Enterococcus faecalis*, *Staphylococcus aureus*, *Escherichia coli*, *Enterobacter aerogenes*, *Staphylococcus epidermidis* and *Klebsiella pneumonia* and less inhibition against *Staphylococcus haemolyticus* and *Pseudomonas aeruginosa*.

Das et al., reported the occurrence of endophytic fungi from *J. wynaadensis*. To the best of our knowledge this is the first attempt to explore the treasure of endophytes and their bioactive potentiality from this plant. The strain *F. incarnatum* displayed broad spectrum antibacterial properties against Gram-positive and Gram-negative pathogens as well as significant antioxidative capacities.

Antioxidant activity: *J. wynaadensis* Methanolic leaf extract exhibited relatively higher anti radical activity (**Sahana Chavan C.S et.al.,**) compared to standards in all the assays except hydroxyl radicals and hydrogen peroxide scavenging due to the presence of large amount of phenolics and flavonoids. The present investigation on the phytochemical analysis of *Justicia wynaadensis* from the above result methanol extract shown the presence of secondary metabolites such as alkaloids, flavonoids, alkaloids, tannins (**M. Abhishek et.al**) etc. **Medapa Sudha et al., (2011)** reported that the antioxidant activity in leaf to be 1.94mg AAE /g and that in stem to be 1.90 mg AAE/g. Maximum catalase activity showed in 1 g of the fresh leaves was 0.0012 μ moles of Hydrogen Peroxide per sec. Maximum peroxidase activity showed in 1 g of freshleaves was 0.00095 μ moles of hydrogen peroxide per second. These enzymes also contribute to the antioxidant activity of this plant.

Anticancer activity: (Vandana C. D. et al.,) It has been reported the in- vitro cytotoxicity of leaves *J. wynaadensis*. Four different extract of were prepared by using water, methanol(aqueous fresh leaves extract, methanolic extract or dry leaves powder, hot (boiled) and cold (macerated) aqueous extract of dry leaves powder) which were subjected

to MTT assay on two cancer cells lines MCF7 (Breast cancer cell line) and HCT116 (Colorectal cancer cell line), cold aqueous extract had the high cytotoxic effect.

Bishma B.L. et al., (2017), *J. wynaadensis*, which is known for various medicinal properties was evaluated for its protective effect against geno- and cyto-toxicities induced by CP (50 mg/kg, b.w) in bone marrow cells of Swiss albino mice.

Antidiabetic activity: Dorin Dsouza the effect of an active compound isolated from *Justicia wynaadensis* against multi drug resistant organisms (MDRO's) associated with diabetic patients. The drug resistant pathogens implicated in wound and urinary tract infection of diabetic patients were isolated and identified by molecular sequencing.

Antifungal activity: Subbaiah et al., (2002) reported that *Justicia wynaadensis* extract is an active compound for lowering cellular cholesterol levels and cholesterol ester concentration. While author did a research for mechanisms in Murine Macrophages it was noticed that the extract counteracted the rise in cholesterol in response to oxidized LDL, a step considered to be critical in the initiation of atherogenic events. It also showed inhibitory effect on the uptake of OXLDL by human macrophage cell line.

Anti-inflammatory activity: Vidhyabharathi B.P. (2012) reported anti-inflammatory activity of *Justicia wynaadensis*. Extraction is done by using Soxhlet apparatus, using absolute alcohol. Extracted residue is concentrated by using rotary flash evaporator. The presence of various phytochemical constituents in the extract is determined using standard screening tests and presence of alkaloids, steroids, flavonoids, cardiacglycosides etc are revealed. Anti-inflammatory activity of *J. wynaadensis* is assessed by the method described by carrageenan induced paw edema method. In this study, ethanolic extracts at a dose of 100 mg/kg and 300mg/kg body weight showed moderate to significant anti-inflammatory activity. The total alcoholic extracts of *J. wynaadensis* reduced the edema induced by carrageenan by 40 % and 44 % respectively on oral administration of 100 mg/kg and 300mg/kg body weight, as compared to the untreated (control) group. The plant *J. wynaadensis* showed antiinflammatory activity comparable to positive control diclofenac.

Phenolic and Flavonoid content:

John Biju et al., (2013) reported that the methanolic extract of different plant parts (roots, stem and leaf) by using reflux extraction method. The leaf extract of *Justicia wynaadensis* shows maximum phenolic and flavonoid content as compare to stem. The total phenolics content were determined by using the Folin-Ciocalteu assay. Total flavonoid content was determined by the aluminium chloride colorimetric assay.

Medapa Sudha et al., (2011) reported that the total flavonoid content in the plant *J. wynaadensis* was found to be 178 and 76 µg Quercetin Equivalent (QE) / g weight of leaf and stem.

II. CONCLUSION:

Only the Western Ghat in the Kodagu District of Karnataka State contains *Justicia wynaadensis*. The plant's distribution has been expanded to include Wynad in Kerala State. This plant's unique qualities include a high medicinal content in the months of July and August. There will be 18 different types of drugs added to the plant. Most individuals in our nation are still unaware of this really significant *Justicia wynaadensis*. *Justicia wynaadensis* has the ability to stimulate the immune system. Many pandemic and epidemic diseases have recently been spreading as technology advances. We can maintain ourselves healthy and disease-free by using *Justicia wynaadensis* as a home treatment, according to reports that this plant contains antiviral characteristics. *Justicia wynaadensis* contains polyphenole and flavonoids that support healthy blood pressure, blood sugar levels, skin and anti-oxidant. The naturally occurring phenolic molecule is crucial for both preventing and treating cancer.

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