

REVIEW LITERATURE ON *Justicia wynaadensis*

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ABSTRACT

Complete analysis of *Justicia wynaadensis* belongs to the Acanthaceae family. Commonly called Maddu Toppu, aati toppu, in Kodagu District, Karnataka. *Justicia wynaadensis* has high medical properties. It has been reported that *Justicia wynaadensis* has anti-bacterial properties, anti-microbial, anti-inflammatory activity. On the basis of above *Justicia wynaadensis* is potential to be used as nutraceuticals and natural colorant. This review article shows the so far done and reported experiment and results of *Justicia wynaadensis*. It has been observed that very few work has carried out on this particular species. All the research conducted on *Justicia wynaadensis* has been gathered and analysis shows that on July and August there comes a monsoon called Aati masa or Kakkada on 18th day of this monsoon medicinal properties of *Justicia wynaadensis* increases its peak. Consumption of *Justicia wynaadensis* on 18th day gives more health benefits. It is proved that this species has antibacterial and antimicrobial activity. It also contains flavonoids and polyphenolic components and also has anti carcinogenic and anti-inflammatory, anti-oxidant, wound healing capacity. This review literature reports the value and importance of *Justicia wynaadensis* by showing complete work so far done on this particular species.

Keyword: - *Justicia*, review literature, anti-oxidant, anti-microbial, anti-inflammatory.

1. INTRODUCTION

Justicia wynaadensis locally called Maddu toppu/ Aati toppu. It is a subshrub, with slender stem 2-3 m long with distant nodes terete, smooth. Oppositely arranged leaves, 5-10 cm long, are elliptic-lance shaped, long pointed, base narrow, with 6-8 pairs of veins. Leaves are carried on 1-2 cm long stalks. Flowers are borne in pairs on drooping spikes 5-10 cm long, axillary and terminal, slender; rachis pubescent, sometimes branched. Flowers in distant pairs; bracts 3x1 mm, hairy; corolla 12 mm long, throat hairy; ovary glabrous. Capsule 17mm long pubescent, seed obovoid, oblique, minutely rugulose, and dark brown in colour.

1.1 Scientific Classification :

Kingdom : Plantae
Division : Tracheophyta
Order : Lamiales
Family : Acanthaceae
Sub family : Acanthoideae
Tribe : Justiceae
Genus : *Justicia*
Species : *Justicia wynaadensis*

It is reported that *Justicia wynaadensis* is endemic to the regions of Western Ghats, from South Canara (Kodagu) to Wynaad, East Nilgiris and South Malabar Hills in South India, upto 3000 feet in Evergreen forests and on Waste

lands. Traditionally from the long back until now it's been practicing that during "ashada maasa" or also called "aati maasa", this monsoon comes during the month of July/ August. The aqueous extract (juice) of *Justicia wynaadensis* taken and by this delicious desserts are prepared and consumed by people. The plant is believed to have maximum medicinal properties when harvested on 17th day [2]. The plant emits pleasant aroma and unique flavor. The juice is extracted and boiled with water and different types of tasty delicious desserts are prepared [2]. It is said that, plant gains each medicinal contents each day and on 18th day the plant will be filled with 18 kinds of medicinal properties. People consume this to have healthy and good life throughout the year and to gain immunity against the diseases.

It has been reported that ethanopharmacological survey in Kodagu District has reported traditional medicinal use of plant in asthma and immunity. The plant is used as an external application over rheumatic swellings by people of Karuchair tribes of Tirunelli Forest, Wayanad District, Kerala.

2. LITERATURE SURVEY

S.U. Ponnamma et al., presented a study which carried out to identify the phytochemicals presenting methanolic extract of *Justicia wynaadensis* by GC-MS analysis. They identified 24 compounds. Among them was palmitic acid, Dihydrocoumarin and phytol, Myristic acid, gamma tocopherol, vitamin E. It has been reported having medicinal properties.

Manjusha Nigudkar et al., reported by conducting a study of Preliminary phytochemical screening and HPTLC fingerprinting analysis of *Justicia wynaadensis*. The phytochemical tests revealed the presence of flavonoids, phenolics, saponins and proteins both in fresh and dry aqueous extract. It showed 10 peaks in aqueous extract and 7 peak in dry extract. It was concluded that Phytoconstituents are prominently showing their presence in aqueous extract of fresh material as there are more number of peaks compared to dry powder extract. Hence, aqueous extract contains high medicinal properties. HPTLC fingerprint profile showed the development of colour component may be anthocyanins as it shown +ve test for anthocyanins.

Biju John et al., (2013) studied on total phenolics and flavonoid in selected *Justicia* species and reported that in *Justicia wynaadensis* there was difference in the presence of phenolics and flavonoid in root, stem and leaf it showed;

	Phenolics	flavonoid
Root	23.95	1.75
Stem	25.36	2.30
Leaf	35.85	2.85

S.U. Ponnamma et al., (2015) studied TLC Bioautography guided screening for compounds inhibitory to *Klebsiella pneumonia* using methanolic extract of *Justicia wynaadensis*. It resulted in four clearly visible active spots showing large inhibition zone. The antibacterial activity of the methanolic extract of *Justicia wynaadensis* against *Klebsiella pneumoniae* MTCC 3384 may be because of presence of myristic acid, linoleic acid stearic acid, phytol.

Madhuchhanda Das et al., (2017) reported the study aims to isolate and identify the fungal endophytes in *Justicia wynaadensis* and evaluation of their antioxidant and antimicrobial potentials. A total of 281 isolates distributed in nine endophytic species were recovered from 400 plant fragments. Nine endophytic species belongs to six genera:

Colletotrichum lindemuthianum

Colletotrichum truncatum

Trichoderma harzianum

Alternaria alternata

Chaetomium globosum

Sarocladium kiliense

Fusarium oxysporum

Fusarium solani

Fusarium incarnatum

Flavonoid was detected in four endophytic strains.

Antioxidant capacity: *F.incarnatum* showed high scavenging capacity followed by *T.harzianum* and *Sarocladium kiliense*.

DPPH radical scavenging assay: *F.incarnatum* showed highest scavenging activity.

Bhagya B. et al., (2013) reported the use of *Justicia wynaadensis* and traditional and ritual practices carried in Karnataka. Consumption of *Justicia wynaadensis* by preparing different dish in the name of celebrating Aati padinett in Kodagu by knowing the medicinal value of the plant.

Farhan Zameer et al., (2016) reported that *Justicia wynaadensis* extract showed significant antibacterial activity against *P.aeruginosa*. *Pseudomonas aeruginosa* is a notorious opportunistic nosocomial and metabolic versatility pathogenic bacteria. *Justicia wynaadensis* leaves extract showed best anti-biofilm activity.

Subbaiah et al., (2002) reported that *Justicia wynaadensis* extract is an active compound for lowering cellular cholesterol levels and cholesteryl 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 OX-LDL by human macrophage cell line.

N.K. Hemanth Kumar et al., (2019) conducted an experiment biosynthesis of zinc oxide nanoparticles (ZnO-NPs) using aqueous leaf extract of *Justicia wynaadensis*. The results validate that the biosynthesized ZnO-NPs from *Justicia wynaadensis* possess biological activities. The biosynthesized ZnO-NPs showed an absorption peak at 329 nm which is the characteristic feature of ZnO-NPs.

Bio-synthesized nano particle were of high purity with an average size of ~39 nm. The interaction between CT-DNA and biosynthesized ZnO-NPs showed hyper chromic shift in absorbance. Thereby indicating that the DNA structures was changed after addition of ZnO-NPs through intercalate mode.

C.D. Vandana et al., (2017) studied to evaluate the invitro cytotoxicity of the leaf extract of *Justicia wynaadensis*. The result found that the cytotoxic activity of the aqueous and methanol extracts of leaf of *Justicia wynaadensis* was evaluated on cancer cell lines. It found the presence of flavonoids, phenols, terpenoids. By doing preliminary phytochemical screening using four different extracts prepared by *Justicia wynaadensis*. Alkaloids were present only in methanolic extract. All the four extracts were subjected to MTT assay on MCF7 and HCT116 cell lines, out of which two extracts showed cytotoxic activity.

Sudha Medapa et al., (2011) studied on phytochemical and antioxidant screening of *Justicia wynaadensis* and reported that total phenolic content present in the plant was found to be 0.65 ± 0.08 mg and 0.16 ± 0.1 mg of (GAE)/ g weight of leaf and stem respectively. Flavonoid content was 178 and 76 μ g QE / g weight of leaf and stem respectively. The result of this study showed the antioxidant activity in leaf to be 1.94 mg AAE / g and that in stem to be 1.90 mg AAE / g. It was concluded that *Justicia wynaadensis* has a potential beneficial effect on human health. They have been reported to have antiviral, anti-allergic, anti-platelet, anti-inflammatory, antitumour and antioxidant activities.

Vidhyabharathi B.P. (2012) reported anti-inflammatory activity of *Justicia wynaadensis*. Anti-inflammatory activity of *Justicia wynaadensis* is assessed by method described by Carrageenan induced paw edema method. The plant *Justicia wynaadensis* showed anti-inflammatory activity comparable to positive control diclofenac.

Dorin D souza et al., (2017) carried out the experiment on wound healing activity of 3, 3', 4' Trihydroxyflavone isolated from *Justicia wynaadensis*. Experiment was carried on diabetic rat. The result show that the dose dependent effect was observed in rats treated with 3, 3', 4' – Trihydroxyflavone, showed faster wound contraction when compared to normal and diabetic control groups. Compared to all the group diabetic rats treated with 3, 3', 4' – Trihydroxyflavone and framycetin showed full recovery at the end of the day 28 with complete healing of the wound. It was concluded that *Justicia wynaadensis* is an interesting biopharmaceutical agent that possess significant antibacterial and wound healing properties against pathogens associated with diabetics.

3. CONCLUSIONS

Justicia wynaadensis found only in the Western Ghat, Kodagu District, Karnataka State. The distribution of the plant has been extended upto Wynad place of Kerala State. The special properties of this plant is that it has the high medicinal content during the month of July/ August. The plant will be increased with 18 varieties of medicines. This highly valuable *Justicia wynaadensis* is still unknown to most people of our country. *Justicia wynaadensis* has a immune activation potential. As the technology is improving so many pandemic and epidemic diseases has been spreading recently. It is reported that, this plant has antiviral properties [11] by consuming *Justicia wynaadensis* as a home remedy, it's possible to keep ourselves healthy and disease free. Polyphenole and flavonoids present in *Justicia wynaadensis* helps in skin protection, brain function, blood sugar, blood pressure regulation. The natural phenolic compound play a very important role in cancer prevention and treatment.

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BIOGRAPHIES

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