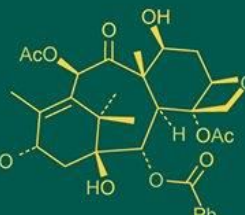


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Manvi Bhatt

Assistant Professor, School of
Pharmacy and Research, Dev
Bhoomi Uttarakhand
University, Dehradun,
Uttarakhand, India

Rishi Gupta

Research Scholar, School of
Pharmacy and Research, Dev
Bhoomi Uttarakhand
University, Dehradun,
Uttarakhand, India

Khushi Bista

Research Scholar, School of
Pharmacy and Research, Dev
Bhoomi Uttarakhand
University, Dehradun,
Uttarakhand, India

Tomo Tasar

Research Scholar, School of
Pharmacy and Research, Dev
Bhoomi Uttarakhand
University, Dehradun,
Uttarakhand, India

Corresponding Author:**Manvi Bhatt**

Assistant Professor, School of
Pharmacy and Research, Dev
Bhoomi Uttarakhand
University, Dehradun,
Uttarakhand, India

Phlogacanthus thyrsiformis: A multidimensional review of its ethnomedicinal heritage, phytochemical wealth, pharmacological promise, and future prospect

Manvi Bhatt, Rishi Gupta, Khushi Bista and Tomo Tasar

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Abstract

Phlogacanthus thyrsiflorus Nees-or Nongmangkha, as its commonly known-is a pretty important shrub in North Eastern India where its from, and its part of the Acanthaceae family. This little plant has been used for ages in traditional medicine to treat all sorts of things like respiratory problems, jaundice and even skin conditions. Ethnomedicinal reports tell us its also been used to help with the flu and some COVID like symptoms. Apparently it's made up of all sorts of good stuff such as flavonoids and alkaloids which are behind all its various medicinal properties. It's also surprisingly high in things like protein and calcium, making it worth looking at as a sort of superfood. Some of the key active compounds have been shown to have antibacterial and antifungal properties, which is really useful. Scientists have also found that its extracts seem to be able to regenerate cells in people with diabetes and help with asthma. So far the toxicology tests have looked pretty good, and thats given it a thumbs up to be used as a treatment for a number of ailments. Given the amount of traditional and modern knowledge that exists about this plant its a pretty good candidate for further research into new medicines and supplements. That said, more clinical trials are really needed to make sure the good stuff gets through to the people who need it.

Keywords: *Phlogacanthus thyrsiflorus* Nees, ethnopharmacology, medicinal use, plant compounds

Introduction

Plant based medicines are a mainstay of traditional healthcare systems-especially in rural and remote areas where modern medicine is hard to come by. That's why research into medicinal plants like *Phlogacanthus thyrsiflorus*, also known as Titaphul, is so vital ^[1]. This gregarious shrub, part of the Acanthaceae family, is native to North Eastern India and boasts some amazing flowers-bright orange red tubular spikes and leaves that are ovoid to lanceolate with smooth edges ^[2]. For generations, local communities have been using both leaves and flowers to treat a wide range of ailments ^[3]. The resurgence of interest in herbal medicine is largely driven by its natural origin, perceived safety and the fact it's a lot gentler on the system than synthetic drugs ^[4]. As a result, medicinal plants are a key component of not just traditional but also modern medicine-and form a vital part of the pharmaceutical, nutraceutical and research industries too ^[5]. Historic texts like the Vedas-which date back over 3500 years-show that humans have been relying on plant based therapeutics for thousands of years ^[6].

The World Health Organisation has identified over 20, 000 medicinal plant species in use worldwide ^[7]-and a staggering 80% of the global population relies on traditional herbal remedies to get by ^[8]. In India, for example, around 80% of the population uses herbal remedies as their primary form of healthcare ^[9]. That's why ancient systems of medicine like Ayurveda, Unani, Siddha and Homeopathy continue to rely so heavily on plant based formulations.

In North Eastern India *Phlogacanthus thyrsiflorus* Nees is one of the most commonly used medicinal plants around. Local healers use different parts of the plant to treat a range of ailments-from allergies and coughs to malaria and tuberculosis ^[10]. It tends to bloom between December and April and is found in tropical regions across the North East. In some communities, the plant holds a special significance and is deeply embedded in local culture and traditions ^[11].

The *Phlogacanthus* genus comprises approximately 15-17 species, with most of them found across the Himalayas and other tropical regions of Asia, including India ^[12]. Every part of this plant has its own unique medicinal properties. We use the leaves to treat allergies and digestive complaints-while the flowers are used as a vegetable and also have therapeutic uses. In some cases, the leaves are even smoked to help alleviate asthma symptoms. And did you know that medicinal salt, which is derived from the plant ash, is used to treat all sorts of ailments-from indigestion to pharyngitis ^[13]? We also use it as a paste to treat chronic skin problems and as an antidote to prevent diseases ^[14].

During the COVID-19 pandemic, *Phlogacanthus thyrsoiflorus* Nees gained new-found importance in Manipur where it was used by local communities as a folk remedy to combat symptoms of the virus ^[15].

The therapeutic value of medicinal plants is largely because of these compounds that are good for you such as alkaloids, tannins, flavonoids, phenolic compounds and terpenoids. These compounds-they can do all sorts of good stuff like stop free radicals, kill off bad bugs, reduce inflammation and help in the fight against cancer ^[16]. And it's not just that-when they work with the good stuff we get from food, they actually help our bodies fight off disease and stress ^[17]. Yet despite people using them for ages, a lot of these compounds still haven't been properly looked at. Some recent research has also suggested that the little critters that live inside the cells of medicinal plants can actually produce tiny chemicals that are just as good at killing off bad bugs as anything we can make in a lab ^[18].

The aims of this study were to take a closer look at medicinal plants for the good stuff they contain, to see if they've got any properties that can fight off bad bugs and how effective they are at doing it, what amount you need to use to get an effect, whether they can help stop free radicals and whether they can cure any bugs-and also to look at the way they react with a special test ^[19].

Taxonomy of the Plant

The plant we're looking at falls into this group-
Kingdom-Plantae
Division-Magnoliophyta
Class-Magnolipsida
Order-Lamiales

Family-Acanthaceae
Subfamily-Acanthoideae
Genus-Phlogacanthus
Species-Phlogacanthus thyrsoiflorus

Vernacular Names

In different parts of the world, this plant is known by many names-in Assam for example they call it Banheka, Titabahak or Titaphul. The Garo people know it as Elliot while the Khasi people call it Baskabomphang, Dieng-soh-ja-buid or Dieng-soh kajut. The Mikir people give it two names-Jaogan and Rambha Arong-while in Nepal it is known as Chua. And the Lepcha people call it Rheom.

Distribution and Cultivation

Phlogacanthus thyrsoiflorus Nees occurs predominantly in the sub-tropical Himalayan region, extending from Ravi to Bhutan, the Upper Gangetic plains, Bihar, North Bengal, Assam, and Bangladesh, up to an altitude of 1200 m ^[20]. The plant is frequently cultivated as an ornamental species due to its attractive foliage and conspicuous floral spikes. Propagation is generally carried out through stem cuttings during the rainy season ^[21]. In Manipur, the species is found in both wild and cultivated forms and grows well in moist tropical climates, extending from 650 to 1300 m above sea level and occasionally reaching temperate regions ^[22]. It thrives in well-drained fertile soils and grows vigorously under partial shade to full sunlight.

Morphology

Phlogacanthus thyrsoiflorus Nees is a bit of a shrub that can grow up to 2.4m high, its leaves can get 13-35 cm long. The branches of the plant are a bit square-shaped and the leaves are a bit pointed at the ends and have no teeth along the edges. The flowers are at the end of the branches and come in long clusters up to 30 cm long-the flowers themselves are tube-shaped and the bits around them are a lovely orange to red colour. When it gets to spring the plant is really noticeable because of the dense clusters of flowers it grows. The bits of the flower are quite hairy, and the bits around them are about 6.8mm long and covered in bristles. The seeds are flat and round, and the plant flowers between February and April ^[23].



Fig 1: Leaf, Stem, root of *Phlogacanthus thyrsoiflorus* Nees.

Table 1: Phyto Chemical Constituents of *Phloganthus Thyrsiflorus* Nees

S. No	Compound Class	Example Bioactive Compound(s)	Plant Part Reported	Reported Activity	Reference no
1	Triterpenoids	Betulin, Lupeol	Stem, Bark, leaves	Antiinflammatory, antimicrobial, cytoprotective	[24]
2	Flavonoids	Flavonoid-rich fractions (multiple flavones/flavonols)	Leaves, flowers, whole plant	Strong antioxidant, antiinflammatory; contributes to antidiabetic effect	[25]
3	Phenolic Compounds	Gallic acid, high total phenolic content	Leaves, flower	Potent antioxidant (DPPH, FRAP, ABTS)	[26, 27]
4	Saponins	(qualitative presence)	Leaves, flower	Immune-modulatory, antimicrobial	[28]
5	Tannins	(qualitative presence)	Leaves, flower	Antimicrobial, astringent, wound healing	[29]
6	Alkaloids	(detected in screenings)	Leaves	Antimicrobial, physiological effect, (general alkaloid activity)	[30]
7	Fatty Acids	Multiple terpenoids, cyclohexanols, fatty acids	Roots, flowers	Antioxidant, antiinflammatory, antimicrobial	[31]

Physical Constants and Nutritional Values

Physical parameters of the plant were worked out on a dry matter basis-and it turned out that the moisture content is 79.1% and the ash content is a respectable 10.4%. The nutritional analysis (per 100 grams) showed that the plant contains fair amounts of fat (3.8 mg), protein (7.1 mg) and carbohydrates (78.7 mg). Micronutrient assessment showed sodium (2.9 mg), potassium (722.9 mg) and calcium (105.0 mg)-all of which play a crucial role in cellular metabolism and energy production [32].

Pharmacological Activities

Antibacterial Activity

When we tested ethanolic extracts of *P. thyrsiflorus* using the disc diffusion method against some nasty bacterial strains, we found that they were pretty effective at killing bacteria like *Staphylococcus aureus*, *Escherichia coli*, and *Pseudomonas aeruginosa*. In fact our extracts were almost as good as Ciprofloxacin at a dose of 5 microgram per ml. Not bad at all-the extracts worked at concentrations of 1 mg per disc and 0.5 mg per disc [33].

Antioxidant Activity

To get an idea of how good the plant's antioxidant potential is, we ran a reducing power assay on the extracts. We compared it to gallic acid, and the results were pretty clear-the plant extract was a pretty strong antioxidant [34].

Hypoglycemic Activity

We ran some glucose tolerance tests on mice using extracts from the leaf and stem bark-and the results were pretty impressive. We saw a significant reduction in blood sugar levels at doses of 100 and 200 milligrams per kilogram. The flower extracts were also good at controlling blood sugar levels in mice with diabetes-we think this is because they make the pancreas release more insulin [35, 36].

Antimicrobial Activity

When evaluating antimicrobial activity against *E. coli*, we used good old-fashioned microbiological techniques, including serial dilution and colony counting [37].

Anti-Asthmatic Activity

The hydro-alcoholic extracts of *Phlogacanthus thyrsiflorus* leaves worked pretty well at stopping asthma attacks in a lab setting. They even worked on histamine-induced asthma-which is some pretty tricky territory [38].

Economical Aspects

Despite the fact that this plant hasn't been commercialized yet, it's still worth a pretty penny to locals in places like India, who pay up to 30 Rs per bundle of flowers. That's some serious money in a place where people live off the land.

Conclusion and Future Scope

Medicinal plants have been keeping people healthy for thousands of years, and it's because of their rich chemical make-up. This review looks at some of the scientific evidence on *Phlogacanthus thyrsiflorus*-and it's pretty clear that this plant is a bit of a superstar when it comes to treating various ailments. With further research, we might be able to develop really effective treatments with minimal side effects [39, 40].

References

1. Savithramma N, Rao ML, Suhrulatha D. Medicinal plants used by traditional healers in Eastern Ghats of Andhra Pradesh. Middle East J Sci Res. 2011;8:579-584.
2. Gupta C, Patel P. *Phlogacanthus thyrsiflorus* Nees—An important medicinal plant: A review. S D Int J Pharm Sci. 2018;1:23-35.
3. Kalita D, Bora RL. Some folk medicines from Lakhimpur district, Assam. Indian J Tradit Knowl. 2008;7(3):414-416.
4. Grover JK, Yadav S, Vats V. Medicinal plants of India with anti-diabetic potential. J Ethnopharmacol. 2002;81(1):81-100.
5. Ncube NS, Afolayan AJ, Okoh AI. Assessment techniques of antimicrobial properties of natural compounds of plant origin: Current methods and future trends. Afr J Biotechnol. 2008;7(12):1797-1806.
6. Brown D. Encyclopaedia of herbs and their uses. London: Dorling Kindersley Ltd; 1995.
7. Panday MM, Rastogi S, Rawat AKS. Indian herbal drugs for general health care: An overview. Int J Altern Med. 2008;6(1):1-10.
8. Vijayan A, Liju VB, Reena JV, Parthipan B, Renuka C. Traditional remedies of Kani tribes of Kottoor reserve forest, Agasthyavanam, Thiruvananthapuram, Kerala. Indian J Tradit Knowl. 2008;7(1):589-594.
9. Hiren BS, Manisha D, Sheju T. Perspective on phytochemical and biochemical compounds of selected Indian medicinal plants. Int Res J Chem. 2013;1(1):37-45.

10. Ningombam DS, Singh PK. Ethnobotanical study of *Phlogacanthus thyrsoformis* Nees: A conserved medicinal plant of Manipur, Northeast India. *Int J Herb Med*. 2014;1:10-14.
11. Clarke CB. Acanthaceae. In: Hooker JD, editor. *Flora of British India*. Vol. 4. London: Lovell Reeve; 1884. p. 512.
12. Singh PK, Singh TB. Some medicinal plants of Manipur: An ethnic approach. *People Sci Netw*. 1995;2:39-40.
13. Khanikar G. *Sahajlavya Bandarabar Gun*. 7th rev ed. Puthitirtha Prakashan; 2005. p. 34.
14. Okarter N, Liu RH. Health benefits of whole grain phytochemicals. *Crit Rev Food Sci Nutr*. 2010;50(3):193-208.
15. Singh AP. Promising phytochemicals from Indian medicinal plants. *Ethnobot Leaflet*. 2005;9:15-23.
16. Wang FW, Jiao RH, Cheng AB, Tan SH, Song YC. Antimicrobial potentials of endophytic fungi residing in *Quercus variabilis* and brefeldin A obtained from *Cladosporium* sp. *World J Microbiol Biotechnol*. 2007;23:79-83.
17. Gunjal A, Patwardhan R, Jedhe A, Choudhary V. Plasmid-curing, antimicrobial, antioxidant properties and phytochemical analysis of medicinal plants from North East India. *Int J Life Sci Pharma Res*. 2022;11(1):P100-P109.
18. Khare CP. *Indian medicinal plants: An illustrated dictionary*. New York: Springer Science + Business Media; 2007. p. 478.
19. Council of Scientific and Industrial Research. *The wealth of India: A dictionary of Indian raw materials*. Vol. 2. New Delhi: Publications and Information Directorate, CSIR; 1992. p. 14.
20. Ningombam DS, Singh PK. Ethnobotanical study of *Phlogacanthus thyrsoformis* Nees: A conserved medicinal plant of Manipur, Northeast India. 2013.
21. Tamang JP, Thapa MP, Sharma RM, Rai AK, Rai P, Dhakal R. Carrying capacity study of Teesta Basin in Sikkim. *Biol Environ Food Resour*. 2005;8.
22. Siddiqui AA, Ali M, Kumar R. Phytochemical investigation and pharmacological activities of triterpenoids: A review. *Int J Pharm Sci Res*. 2014;5(2):1-12.
23. Pietta PG. Flavonoids as antioxidants. *J Nat Prod*. 2000;63(7):1035-1042.
24. Rice-Evans CA, Miller NJ, Paganga G. Antioxidant properties of phenolic compounds. *Trends Plant Sci*. 1997;2(4):152-159.
25. Scalbert A, Johnson IT, Saltmarsh M. Polyphenols: Antioxidants and beyond. *Am J Clin Nutr*. 2005;81(1):215S-217S.
26. Sparg SG, Light ME, van Staden J. Biological activities and distribution of plant saponins. *J Ethnopharmacol*. 2004;94(2-3):219-243.
27. Scalbert A. Antimicrobial properties of tannins. *Phytochemistry*. 1991;30(12):3875-3883.
28. Cushnie TPT, Lamb AJ. Antimicrobial activity of alkaloids. *Int J Antimicrob Agents*. 2005;26(5):343-356.
29. Gunstone FD. *The chemistry of oils and fats: Sources, composition, properties and uses*. Oxford: Blackwell Publishing; 2004.
30. Gogoi B, Kakoti BB, Bora NS, Goswami AK. Phytochemistry and pharmacology of *Phlogacanthus thyrsoflorus* Nees: A review. *Int J Pharm Sci Rev Res*. 2013;23(2):175-179.
31. Ahmed S, Borah M, Das S. A comparative study of antibacterial activity of ethanolic extract of *Phlogacanthus thyrsoflorus*, *Houttuynia cordata*, *Curcuma caesia* and *Syzygium jambos*. *Int Res J Pharm*. 2012;3(9):282-284.
32. Ningthoujam T, Singh YA, Laldingliani TBC, Singh SH, Kumar A. Comparative study of phytochemicals, antioxidant and antibacterial activity of *Phlogacanthus thyrsoformis* Nees and *Justicia adhatoda* Linn. 2023.
33. Ilham S, Ali MS, Hasan CM, Kaisar MA, Bachar SC. Antinociceptive and hypoglycemic activity of methanolic extract of *Phlogacanthus thyrsoflorus* Nees. *Asian J Pharm Clin Res*. 2012;5(2):15-18.
34. Chakravarty S, Kalita JC. Antihyperglycaemic effect of flower of *Phlogacanthus thyrsoflorus* Nees on streptozotocin-induced diabetic mice. *Asian Pac J Trop Biomed*. 2012;2(3):S1357-S1361.
35. Singh AT, Shaikh IN, Rale MV. Synthesis of gold and silver nanoparticles using *Phlogacanthus thyrsoformis* extracts: Phytochemical screening and antioxidant studies. *Mater Today Proc*. 2021;43:2805-2809.
36. Paharia AK, Pandurangan A. Evaluation of anti-asthmatic activity of hydroalcoholic extract of *Phlogacanthus thyrsoflorus* Nees in experimental animals. *Glob J Pharm Res*. 2013;2(2):1818-1824.
37. Chahliha N. Effect of *Capparis decidua* on hypolipidemic activity in rats. *J Med Plants Res*. 2009;3(6):481-484.