

GARDENIA GUMMIFERA: EFFECTS, ADVANTAGES AND FUTURE PROSPECTS

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ABSTRACT

This review employs a novel methodology to ascertain the present state of the well-known medicinal plant *Gardenia gummifera* Linn. f., which grows in India's tropical woods. In the Ayurvedic medicinal system, it is frequently used for its anthelmintic, carminative, and antispasmodic properties. Had abundant medicinal, antiradical, and insecticidal qualities compared to other parts of the *Gardenia gummifera* plant; nonetheless, the entire plant exhibited medicinal properties such as antispasmodic, carminative, anthelmintic, diaphoretic, and medicine. The purpose of this review is to highlight how many people use medicinal plants, minerals, and organic materials as sources of their medications. Apart from its medical importance, this tree has also been used for culinary and medicinal purposes. although this review also mentions the phytoconstituents found in *Gardenia gummifera*.

KEYWORDS: *Gardenia gummifera*, antispasmodic, ayurvedic, phytoconstituents.

INTRODUCTION

The majority of medical therapies used natural resources before the development of modern medications. This type of care is referred to as traditional therapy. India has exceptionally high standards for its medical procedures, including Ayurveda, Unani, and Siddha remedies. The primary sources of raw materials for Ayurvedic, Siddha, and Unani medicine manufacture are forests. In the Red Data Book, however, a large number of forest flora have accumulated.

Over 90% of basic materials come from forest extraction.^[1] Over a thousand plant species are employed in various regions of India for traditional medicinal purposes. There are medicinal

plants growing in backyards, on the sides of roads, and in homes close to residential areas.^[3]

Plant profile:

Botanical name: *Gardenia gummifera* Linn.

Family: Rubiaceae

Genus: *Gardenia*

Species: *Gardenia gummifera*



One of the red-listed species indigenous to the Indian peninsula, *Gardenia gummifera* Linn. f. is primarily found in the dry forests of Karnataka, Tamil Nadu, Andhra Pradesh, and Kerala. It is a member of the Rubiaceae family. The plant is classified as vulnerable and is thought to be one of the rare plant species in India that is in danger of going extinct. It used to be widely distributed throughout rocky terrains, with a fragmented distribution that included mountainous areas and its habitat. (Nadkarni and Basu pg.149) The plant can tolerate a standard range of temperatures and rainfall, although severe summers might cause it to partially dry up. The capacity of the dried bulbs to grow again signals the arrival of the rainy season and guarantees their survival. The plant is in danger of going extinct because of widespread biotic disturbances and deforestation brought on by human activity, even though it can tolerate variations in temperature and rainfall conditions to a considerable degree. This highlights the necessity for conservation.^[3]

Gardenia gummifera L. has many synonyms, including suvirya, panga, jantuka, hingupatri, venupatri, hingusivatika, and vamsa patri. Indigenous medical practitioners in India are also aware of its therapeutic properties.^[3] *Ligustia latifolia* Ait, often referred to as Indian

boxwood or Ceylon boxwood, is a tiny, highly foliaceous tree that grows throughout most of India. It is typically found in deciduous forests around streams.^[9]

Gummifera gardenia Linn. f is often a huge, woody, blooming shrub or small tree that reaches a height of three to seven meters. Its firm, yellowish-white trunk has a rough feel. The leaves are separated into pairs of 10–16 lateral nerves, each of which has an axil with a dot-shaped gland known as "Domatia." The leaves are glossy, simple, elliptic, oblong, and somewhat sessile, about 4 to 8 cm in length.

The leaves resemble guava leaves in appearance, and when the bark is cut or the leaves are plucked, a yellow gum is released onto the surface. The June–July blooming flowers are yellowish, bisexual, solitary, axillary, and 4–7 cm long. They have a distinct scent. The corolla has a tubular base and 5–9 lobes with a diameter of 5–12 cm. The petals are white and turn yellow as they mature. Berries are fruits that have a lot of seeds in them. Fruits are available from August to October and are oval in shape with a meaty mesocarp.^[3]

Gummifera gardenia It is responsible for producing nadihingu, a dried exudate made of resin that is extracted from the apex of the plant. The plant nadihingu, or *G. gummifera*, is well-known for its wide range of therapeutic uses, which include analgesic, carminative, anthelmintic, and diaphoretic effects. It helps to heal and cleanse wounds and ulcers, as well as address stomach problems including flatulence. The gum resin that spontaneously emerges from the leaf buds of is referred to by the synonym "Dikamali." *Gardenia gummifera*. Lump or cake form is how this resin is most often sold. *Gardenia gummifera*'s action is recognized as an antihelminthic alternative in the Indian Materia Medica, and Indian Medicinal Plants mentions the usefulness of powdered gum-resin as an anthelmintic in roundworm patients.^[4] The Indian Medicinal Plants book also mentions a dosage of 200–300 mg for gum-resin. In addition, Dikamali is a plant that has a variety of therapeutic uses, such as anthelmintic and antispasmodic. It is advertised as an anthelmintic, expectorant, diaphoretic, carminative, and antispasmodic. It's also reportedly used in veterinary practices to clean filthy ulcers and deter flies from landing on sores. It is said to be helpful in the management of mania and epilepsy. Patients with epilepsy may also experience fewer seizures when the resin is fumigated. In light of these factors, the current study was launched to examine the potential neuropharmacological effects of the essential oil found in the oleo gum resin of *Gardnera lucida*. In the past, many flavonoids were extracted from dikamali. Our research identified five novel cycloartanes from this source and evaluated their antibacterial properties.^[16]

Additionally, it is commonly used to treat splenomegaly, neuropathy, obesity, lipolytic diseases, bronchitis, dyspepsia, flatulence, and cardiac debility. It is also used to children to treat neurological disorders and dentition-related diarrhea. Additionally, veterinarians use it to keep flies away from wounds.^[3]

Ayurveda mentions the ability of the resin to alleviate Kapha and Vata doshas. Also, the paste of the bark finds use as an antispasmodic and expectorant. It is traditionally given to children or infants for treating digestive disorders and dental problems during the eruption.^[4] The resin is said to be able to balance the Kapha and Vata doshas in Ayurveda. Additionally, the bark paste is used as an expectorant and an antispasmodic. Traditionally, it has been administered to young patients to address dental issues and stomach illnesses during the eruption period.^[4] Taking into account the above described traditional applications, it can be concluded that the plant has a wide range of medical benefits. It can be hypothesised that the identification, characterization, and assessment of the phytoconstituents of the plant could open the door to the discovery of several effective medications against a variety of diseases, as the pharmacologically significant actions of the plant are a cumulative impact of its components.

Phytoconstituents found in *gardenia gummifera* for various activities

Gardenia gummifera Linn. f. is a veritable treasure trove of phytoconstituents, which give it its medicinal qualities. *Gardenia gummifera* Linn has the phytoconstituents. F can be categorized under proteins, tannins, volatile oils, terpenoids, alkaloids, steroids, glycosides, flavonoids, anthocyanins, saponins, phenols, and carbohydrates. The two main classes of phytochemicals included in this plant are flavones and phenolics. Numerous studies have documented the anti-oxidant and free radical-scavenging capabilities of phenolics and flavonoids, which are present in several plants. *Gardenia gummifera* Linn. f. is also known to contain iridoids, which are compounds with antifungal and anti-inflammatory activities and a cyclopentano perhydro phenanthrene ring structure. From the stem bark of *G.gummifera*, oleanolic aldehyde, β -sitosterol, D-mannitol, erythrodiol, and 19- β hydroxyl erythrodiol were separated and identified.^[2]

Pharmacological effects

1. Anthelmintic Effect Utilizing native plant extract offers the potential to be an additional control strategy that could lessen the need for medication and delay the onset of disobedience. Research has been done on a thorough in vitro evaluation of the efficaciousness of seven

distinct native plant extracts against livestock gastrointestinal parasites. The research findings indicate that some of the seven plants have anthelmintic effects against gastrointestinal nematodes in livestock. This is confirmed by the results of the egg hatch assay, larval development assay, and larval mortality assay conducted in vitro.^[2]

2. Antibacterial

Further research should be done on extracts with strong medicinal drug properties in order to determine their potential therapeutic applications. This investigation supports the folkloric use of these plant extracts by indicating that they were therapeutic drugs against microbial infections.^[2]

3. Antimicrobial, Antiradical and Insecticidal activity

When compared to leaf extract, *Gardenia gummifera* fruit extract was found to have greater antibacterial, antiradical, and insecticidal action. The presence of phytochemicals in extracts can be attributed to the identified bioactivities. When the plant is of the right kind, it can be used to manage phytopathogenic fungi, insects, aerobic stress, and infectious illnesses.^[2]

4. Anticancer Activities

It has been discovered that these leaf extracts have antineoplastic and inhibitory properties. The active ingredient responsible for the beneficial effects of antineoplastic drugs is cycloartanes. The purpose of this work was to review the effects of *Gardenia gummifera* on MDA-MB-231 cell lines. Additionally, it was discovered that the methanolic extracts of *Gardenia gummifera* leaves included phytochemical substances that exhibited a variety of antineoplastic actions and mild restrictive scavenging.^[2]

Advantages

1. *Gardenia gummifera* is a natural product (like herbs), low in cost, and has no negative effects. It also lowers the percentage of mortality.^[1]
2. There are a lot of herbal plants with strong therapeutic properties, such as *G. gummifera*.^[2]
3. It strengthens the affected body parts and helps to lessen pain.
4. The resin, called nadihingu, is also utilized as an efficient analgesic and pain reliever, as well as a treatment for tooth infections and aches.^[3]
5. Traditionally, it has been administered to young patients to address tooth issues and stomach illnesses during the eruption period.

Future prospects

Thus, it is crucial to do scientific research on traditional remedies, develop medications through bioprospecting, and preserve medicinal plants in a methodical manner. Thus, it is crucial to conduct scientific research on traditional remedies, develop medications through bio prospecting, and preserve *Gardenia gummifera* L. medicinal plants in a methodical manner. Thus, it is crucial to do scientific research on traditional remedies, develop medications through bioprospecting, and preserve medicinal plants in a methodical manner. The goal of this review is to assist future scientists in deciphering the molecular characteristics of the elements that make up *G. gummifera*. Future research pertaining to the separation and structural identification of active constituents against a variety of illnesses has a plethora of opportunities due to the plant's abundance of active phytoconstituents.^[3]

CONCLUSION

In cases of mild to moderate exposure, recovery is frequently complete and there are no neurological or musculoskeletal side effects. The rising expense of pharmaceuticals and their side effects prompted the promotion of natural remedies and new directions in pharmaceutical research. Thus, using natural items (like herbs) has no negative effects, is affordable, and lowers the death rate. The significance of *G. gummifera* L.f. in traditional medicine and its potential application in primary healthcare were emphasized in this review. As this paper discusses, *G. gummifera* L.f. has a variety of significant pharmacological actions due to the presence of phytoconstituents.^[17] Among the uncommon medicinal plants, *G. gummifera* plays a significant role in treating a variety of illnesses, including splenomegaly, bronchitis, dyspepsia, obesity, lipolytic diseases, and cardiac debility.^[7]

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