From tradition to modern science: A comprehensive review of *Nardostachys jatamansi's* therapeutic benefits and pharmacological activities

**Abstract**

**Objectives:** This review aims to consolidate existing knowledge on *Nardostachys jatamansi* (Indian spikenard), exploring its historical significance, botanical characteristics, chemical composition, and pharmacological activities to provide a comprehensive resource for researchers and clinicians.

**Data Sources:** Information was gathered from Ayurvedic texts, modern scientific literature, and electronic databases including Google Scholar, ScienceDirect, Springer, and PubMed. The search included articles published up to 2025, using keywords such as "*Nardostachys jatamansi*," "botany of *Nardostachys jatamansi*," and "pharmacological activity of *Nardostachys jatamansi*."

**Review Methods:** A systematic review of selected literature was conducted, focusing on botanical classification, taxonomy, ethnobotany, phytochemistry, and pharmacology. Data were analyzed to identify traditional uses, chemical constituents, and experimentally validated pharmacological effects.

**Results:** *Nardostachys jatamansi* contains diverse chemical constituents including terpenes, fatty acids, and other compounds such as jatamansone and nardostachone. Traditional uses in Ayurveda include treatments for neurological, cardiovascular, and dermatological conditions. Modern pharmacological studies support its antifungal, antibacterial, hepatoprotective, cardioprotective, hypolipidemic, antidepressant, antioxidant, neuroprotective, antiparkinson, anticonvulsant, anti-hyperglycemic, and anticancer activities.

**Conclusion:** *Nardostachys jatamansi* is a herb with significant therapeutic potential, supported by both traditional use and modern scientific evidence. Its diverse pharmacological activities warrant further investigation to explore clinical applications and develop novel therapeutic agents.

**Keywords:** Nardostachys, phytochemistry, neuroprotective, ayurveda, pharmacology

# Introduction

*Nardostachys jatamansi* DC, commonly known as Indian spikenard, has a rich historical significance rooted in ancient texts, including the Bible and Ayurvedic scriptures. Revered as a precious oil used for anointing, spikenard symbolizes devotion and spiritual reverence [1]. In the Bible, it is mentioned as a luxurious perfume, anointing oil, and an indication of the very best being offered. Specifically, the plant is cited in the Song of Solomon, where it represents the intimate love between bride and groom, with phrases like, “While the king was at his table, my perfume spread its fragrance,” emphasizing the unique and treasured nature of its aroma. Spikenard was also famously associated with Mary of Bethany, who anointed Jesus' feet before his Crucification with an alabaster jar of spikenard (John 12:3) [2]. This act is often interpreted as her desire to express her love and devotion by offering the very best she had, symbolizing a total surrender and worship. The jar may have represented her dowry or inheritance, suggesting it was of great personal significance. Her lavish gift offers a poignant illustration of the depth of worship expected from believers-giving one's very best to the Lord [3]. Beyond its historical and cultural significance, *Nardostachys jatamansi* is a small perennial herb of the *Valerianaceae* family, predominantly found in the Himalayas, thriving in rocky, moist environments at altitudes ranging from 2300 m to 6000 m [4]. The plant features long, sessile, oblong-ovate leaves and produces slightly blue or pink flowers in dense cymes. Its roots and rhizomes are particularly valued in traditional medicine systems, employed for a variety of ailments, including spinal headaches, menopausal symptoms, flatulence, cardiac issues, epilepsy, and intestinal colic [5].

The essential oil extracted from Jatamansi exhibits several pharmacological properties, such as antimicrobial, antifungal, hypotensive, antiarrhythmic, and anticonvulsant activities. Its major components include *sesquiterpenes*, with jatamansone and nardostachone being particularly notable [6]. Traditionally, spikenard has been used for its calming effects and its role in treating conditions across various body systems, including digestive, circulatory, nervous, respiratory, urinary, and reproductive systems Overall, the historical reverence for spikenard underscores its significance not only as a treasured aromatic substance but also as a versatile medicinal herb, symbolizing the commingling of cultural heritage and natural healing practices.

**Fig 1:** Taxonomic classification

# Methodology

This literature review was compiled from Ayurvedic texts, relevant modern science books, and research articles published in both print and electronic formats. Utilizing various scientific web directories, including Google Scholar, ScienceDirect, Springer, and PubMed, the review collected literature related to the botanical classification, taxonomy, ethnobotany, phytochemistry, and pharmacology of *Nardostachys jatamansi* up to 2025. To identify pertinent literature, the following keywords were employed: “*Nardostachys jatamansi*,” “the botany of *Nardostachys jatamansi*,” and “pharmacological activity of *Nardostachys jatamansi*.” Additionally, computerized medical databases such as E-Samhita, PubMed, Google Scholar, Medline, Embase, and Mantis were searched using keywords like *Nardostachys jatamansi*, sesquiterpenes, jatamansone, and pharmacology. The findings from these searches were reviewed concerning the medicinal uses of Jatamansi and other significant aspects, including safety.

**Chemical Constituents of *Nardostachys jatamansi*** *Nardostachys jatamansi* contains a variety of chemical constituents, including:

**Terpenes:** Alpha-patchoulenese, beta-eudesemol, beta- patchoulenese, calarene, calarenol, elemol, jatamansin, jatamansinol, jatamansone, patchouli alcohol, seychelane, seychellen, seychellene, and spiro jatamol.

**Fatty Acids and Alcohols:** n-Hexacosane, n-hexacosanol, and n-hexacosanyl arachidate.

**Other Compounds:** Actinidine, angelicin, virolin, valeranal, and valeranone.

**Additional Chemical Compounds:** Jatamansic acid, jatamansone semicarbazone, lupeol, malliene, norsechelanone, and dietheniod bicyclic ketone (nardostachone).

**Extractive Substances:** The plant also includes volatile essential oil, resin, sugars, starch, bitter extractive matter, gum, and ketones.

Overall, *Nardostachys jatamansi* is rich in various compounds such as sesquiterpenes, coumarins, and other phytochemicals, contributing to its medicinal properties.

**Medicinal Uses of *Nardostachys jatamansi* in Ayurveda Classics:** *Nardostachys jatamansi* is highly regarded in Ayurvedic medicine for its diverse therapeutic properties, classified under various actions (Karma) that promote health and well-being. The plant is recognized for its ability to provide cooling effects (Sheetala), making it useful in conditions characterized by heat or inflammation [8]. Its Varnya property contributes to enhancing skin health, while Vedanasthapana refers to its capacity to alleviate pain, providing relief in various painful conditions. Additionally, *Nardostachys jatamansi* plays a role in Sangyasthapana, which aids in inducing a state of calmness and tranquility [9]. It is considered Medhya, enhancing cognitive function and memory, and Bhutaghna, it helps negate negative energies or spirits. The plant is also esteemed for its Balya properties, which promote strength and vitality. Further specific uses include Akshepashamana, which calms seizures; Nidrajanana, which promotes sleep; and Shamaka, which restores balance and alleviates imbalances within the body [10]. The herb is beneficial in Deepana and Pachana, which enhance digestion and metabolism [11]. In liver health, *Nardostachys jatamansi* is noted as Yakriduttejaka, and its Dahaprashamana property helps in relieving burning sensations. It aids in Anulomana, facilitating smooth bowel movements, and provides relief from abdominal discomfort characterized by Shoolaprashamana [12-13]. Its effects extend to Hrid-balya, supporting heart health, and Raktabharaniyamaka, which aids in maintaining proper blood circulation. Furthermore, *Nardostachys jatamansi* is known for its Vajikara effects, enhancing fertility and vitality. It helps in managing Pitta dosha (Pittasaraka) and supports female reproductive health through Artavajanana (promoting menstrual health) [14]. The herb has a role in inducing sweat (Swedajanana) and addressing skin conditions (Kushthaghna) [15]. Lastly, it promotes Nadibalya, strengthening the nervous system, and Keshavardhana, enhancing hair health, while also providing fever relief (Jwaraghna) and managing anxiety (Udveshthananirodhi). Its diuretic effects (Mootrala) and mild purgative properties (Mridurechana) make *Nardostachys jatamansi* a multifaceted herb in the Ayurvedic pharmacopoeia, harnessing the power of nature for holistic healing.

**Table 1:** Traditional Uses

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| **Sr. No.** | **Traditional Use** | **Description** |
| 1 | *Sannipatikavikara* | A condition arising from the imbalance of three doshas (Vata, Pitta, Kapha) causing various systemic disorders. |
| 2 | *Vatavyadhi* | Disorders related to Vata dosha, often manifesting as pain, dryness, and neurological issues. |
| 3 | *Shotha* | Swelling or inflammation of tissues, particularly as seen in conditions like arthritis or infections. |
| 4 | *Unmada* | Mental disorders or madness characterized by disturbances in the mind and senses. |
| 5 | *Murchha* | Fainting or a state of unconsciousness often due to a sudden drop in blood pressure or intense stress. |
| 6 | *Chitodvega* | Disturbance of the mind marked by anxiety, excitement, or agitation. |
| 7 | *Manasavikara* | Psychological disorders including anxiety, depression, or other mental health issues. |
| 8 | *Vismriti* | Memory loss or forgetfulness often due to mental fatigue or stress. |
| 9 | *Shoola* | Abdominal pain or discomfort, can also refer to other types of pain in the body. |
| 10 | *Daha* | Burning sensations within the body, particularly in conditions related to Pitta dosha. |
| 11 | *Visphota* | Conditions characterized by bursting pains, often related to accumulation of gas or digestive issues. |
| 12 | *Vranashotha* | Inflammation associated with wounds or ulcers, promoting healing. |
| 13 | *Varnavikara* | Skin disorders affecting pigmentation or coloration. |
| 14 | *Swedadhikya* | Excessive sweating which could be symptomatic of various underlying conditions. |
| 15 | *Sweda-daurgandhya* | Foul-smelling sweat, often linked to metabolic or digestive imbalances. |
| 16 | *Apasmara* | Epilepsy or disorders marked by sudden seizures or temporary loss of consciousness. |
| 17 | *Apatantraka* | Mobility issues related to muscle weakness or rigidity. |
| 18 | *Mastishka daurbalya* | Weakness of the brain or nervous system, leading to fatigue and cognitive decline. |
| 19 | *Shirahshoola* | Headaches or migraines that can be debilitating. |
| 20 | *Kampavata* | Conditions involving tremors or spasms, often seen in Parkinson’s disease or essential tremor. |
| 21 | *Nidranasha* | Insomnia or lack of sleep that affects overall health and well-being. |
| 22 | *Agnimandya* | Reduced digestive fire, leading to poor digestion and metabolic issues. |
| 23 | *Anaha* | Abdominal distension or bloating often due to gas retention. |
| 24 | *Udarashoola* | Severe abdominal pain or discomfort related to digestive issues or gastritis. |
| 25 | *Amashayashotha* | Inflammation of the stomach, which can lead to discomfort and digestive disturbances. |
| 26 | *Chhardi* | Nausea or vomiting, often signaling gastrointestinal disturbances. |
| 27 | *Kamala* | Jaundice or liver dysfunction, often signified by yellowing of the skin and eyes. |
| 28 | *Hriddrava* | Cardiac weakness or conditions relating to heart health. |
| 29 | *Raktabharadhikya* | Conditions characterized by excessive blood circulation or disorders leading to bleeding tendencies. |
| 30 | *Arsha* | Hemorrhoids or anal fissures that can cause pain and discomfort. |
| 31 | *Hikka* | Hiccups or spasms of the diaphragm, often indicating irritability in the gastrointestinal tract. |
| 32 | *Kasa* | Cough, which can be acute or chronic, often related to respiratory health. |
| 33 | *Shwasa* | Asthma or difficulty in breathing characterized by wheezing and respiratory distress. |
| 34 | *Mootrakrichchhra* | Difficult or painful urination, often due to urinary tract issues. |
| 35 | *Bastishotha* | Inflammation of the urinary bladder, leading to pain and discomfort. |
| 36 | *Klaibya* | Impotence or sexual dysfunction affecting male reproductive health. |
| 37 | *Piditartava* | Disorders affecting menstruation, which may include pain or irregularities. |
| 38 | *Sadyovrana* | Fresh or acute wounds that require prompt healing. |
| 39 | *Bhagna* | Fractures that need attention for healing and recovery. |
| 40 | *Garbhashaya shotha* | Inflammation of the uterus, which may lead to various gynecological issues. |
| 41 | *Twagvikara* | Skin diseases or disorders affecting the skin's health and appearance. |
| 42 | *Vatarakta* | Gout or conditions resulting from an imbalance of Vata and blood disorders. |
| 43 | *Visarpa* | Skin diseases characterized by inflammatory lesions, often resembling serpiginous patterns. |
| 44 | *Daurbalya* | General weakness or debility that affects various bodily functions. |
| 45 | *Sannipatika jwara* | Fever arising from the imbalance of all three doshas, indicating systemic issues. |
| 46 | *Raktaprakopa* | Conditions marked by excessive blood heat or irritability leading to various health problems. |
| 47 | *Bhrama* | Dizziness or vertigo often resulting from disturbances in the inner ear or balance. |
| 48 | *Dantashoola* | Toothache, which can arise from dental issues or infections. |
| 49 | *Mukharoga* | Oral diseases including infections or irritations affecting oral health. |
| 50 | *Mukhadaurgandhya* | Bad breath or foul odor emerging from the mouth, which may signal oral or digestive issues. |
| 51 | *Netraroga* | Eye disorders or conditions affecting vision and eye health. |
| 52 | *Vishavikara* | Poisoning or illnesses caused by toxic substances, requiring detoxification. |
| 53 | *Ashmari* | Kidney stones or urinary calculi, leading to pain and urinary issues. |
| 54 | *Kushtha* | Chronic skin diseases, including leprosy or other similar conditions. |
| 55 | *Bhootabadha* | Conditions believed to be caused by evil spirits or negative energies. |

**Fig 1:** Roots of *Nardostachys jatamansi*

*Nardostachys jatamansi*, or spikenard, is utilized in perfumery for its distinctive scent profile and fixative qualities. It offers earthy, woody, and musty notes with a subtle sweetness, often used as a base note to provide depth and longevity to fragrances [16-17]. Spikenard acts as a fixative, blending and stabilizing other aromatic components, making it suitable for oriental and woody perfumes. Extracted via steam distillation or solvents, spikenard has a rich history and cultural significance, enhancing both traditional and contemporary fragrance compositions with its complex aroma

[18].

**Pharmacological Activities of *Nardostachys jatamansi***

# Antifungal and Antibacterial Activity

*Nardostachys jatamansi* has been investigated for its effectiveness against a range of bacterial and fungal pathogens, highlighting its potential value in treating infections. The active compounds present in this herb, particularly essential oils, work by inhibiting the growth and reproduction of microbes through mechanisms that disrupt their cell membranes and metabolic processes. In a study evaluating the antimicrobial properties of *Nardostachys jatamansi*, it was tested alongside 61 other medicinal plants from 33 different families against several microorganisms. The antimicrobial screening involved diluting the extracts in agar at concentrations of 500 µg/ml and 1000 µg/ml. *Nardostachys jatamansi* was assessed for its activity against species such as Saccharomyces cerevisiae, Aspergillus niger, Candida albicans, Streptococcus faecalis, and Klebsiella pneumoniae, as well as Staphylococcus epidermidis. The results revealed that the methanolic extract of *Nardostachys jatamansi* demonstrated effectiveness against most of the tested microorganisms, thereby supporting its role as an antimicrobial and antifungal agent [19-20].

# Hepatoprotective Activity

*Nardostachys jatamansi* is recognized for its ability to protect the liver from damage caused by toxins, alcohol, and drugs, which is crucial for maintaining overall liver health and

function. The herb enhances the liver's antioxidant defense system, reduces oxidative stress, and promotes the regeneration of liver cells. Certain compounds within it may also assist in the detoxification process. In a study involving rats, pre-treatment with 800 mg/kg of the 50% ethanolic extract of *Nardostachys jatamansi* rhizomes significantly reduced elevated levels of serum transaminases (aminotransferases) and alkaline phosphatase in animals treated with thioacetamide. The hepatoprotective activity was demonstrated through the normalization of various serum enzyme levels that were elevated due to thioacetamide- induced liver damage [21].

# Cardio Protective Activity

*Nardostachys jatamansi* plays a role in promoting heart health by helping to prevent cardiovascular diseases and supporting overall cardiac function. Its beneficial effects are attributed to its ability to lower blood pressure and cholesterol levels, along with its antioxidant properties that reduce oxidative stress on heart cells. In a study involving rats treated with doxorubicin at a dose of 15 mg/kg via intraperitoneal injection, myocardial damage was observed, indicated by elevated serum marker enzymes such as lactate dehydrogenase, creatine phosphokinase, aspartate amino transaminase, and alanine amino transaminase. The treatment also resulted in significant alterations in the activity of antioxidant enzymes, including superoxide dismutase, glutathione peroxidase, catalase, and glutathione-S- transferase, as well as increased levels of lipid peroxidation. However, pre-treatment with *Nardostachys jatamansi* extract significantly prevented this damage and restored the activity of antioxidant enzymes and lipid peroxide levels to near- normal values [22].

# Hypolipidemic Activity

*Nardostachys jatamansi* is known to lower elevated blood lipid levels, particularly cholesterol and triglycerides, which is essential for reducing the risk of heart disease. Its beneficial effects are thought to stem from its ability to enhance lipid

metabolism by influencing liver enzymes responsible for lipid synthesis and breakdown. In a study involving rats administered a single dose of doxorubicin at 15 mg/kg via intraperitoneal injection, there was an increase in serum and cardiac lipid levels, including cholesterol, triglycerides, free fatty acids, and phospholipids. This was accompanied by a notable rise in serum low-density lipoproteins (LDL) and very low-density lipoproteins (VLDL), along with a decrease in high-density lipoproteins (HDL), leading to alterations in the activity of serum and cardiac lipid-metabolizing enzymes. However, pre-treatment with a 500 mg/kg oral dose of *Nardostachys jatamansi* extract for seven days prior to doxorubicin administration resulted in significant improvements in lipid status and the activities of lipid- metabolizing enzymes. Moreover, histopathological observations aligned well with the biochemical findings [23].

# Antidepressant Activity

*Nardostachys jatamansi* holds potential as an adjunctive treatment for mood disorders, such as depression and anxiety. Its proposed mechanism of action involves the modulation of neurotransmitters like serotonin and dopamine, enhancing mood and emotional well-being through its calming influence on the nervous system. The antidepressant effects of a methanolic extract of *Nardostachys jatamansi* were evaluated using the forced swim test (FST), tail suspension test (TST), and assessments of locomotor activity in inbred male Swiss mice. The extract was administered at doses of 200 and 400 mg/kg orally and compared to the standard antidepressant imipramine (10 mg/kg orally) in both normal and sleep- deprived mice. The results indicated that *Nardostachys jatamansi* at both doses produced a significant antidepressant- like effect (*P*<0.001) in both the TST and FST, with efficacy comparable to that of imipramine. No significant changes were observed in the locomotor functions of mice compared to the normal control group. However, in sleep-deprived mice, N. jatamansi significantly (*P*<0.01) improved locomotor activity, aligning with the normal control results. These findings suggest that *Nardostachys jatamansi* exhibits dose-dependent antidepressant activity and may be beneficial for patients experiencing depression related to sleep disturbances [24].

1. **Antioxidant, Neuroprotective Activity, and Stress Relieving Activity:** *Nardostachys jatamansi* offers strong antioxidant benefits, safeguarding cells from oxidative damage, and plays a role in enhancing mental health by reducing stress levels. Its mechanism involves compounds within the herb that scavenge free radicals, thereby minimizing cellular damage-a crucial factor in maintaining cognitive function and preventing neurodegenerative diseases. The anti-stress effects of a hydro-ethanolic extract of *Nardostachys jatamansi* were assessed in relation to its antioxidant properties. Wistar rats were divided into four groups: naïve, stressed, T-200, and T-500, with the latter two receiving oral pre-treatment with *Nardostachys jatamansi* extract at doses of 200 and 500 mg/kg, respectively. The rats underwent a 4-hour restraint period in metallic chambers at 4°C, after which they were sacrificed to evaluate stress- induced alterations in biochemical parameters as well as the incidence and severity of ulcers. The *in vitro* antioxidant activity of *Nardostachys jatamansi* was measured by assessing its free radical scavenging ability. The extract demonstrated significant antioxidant activity, effectively reversing stress-induced increases in lipid peroxidation (LPO)

and nitric oxide (NO) levels, as well as the decrease in catalase activity observed in the brain. These findings indicate that *Nardostachys jatamansi* possesses substantial anti-stress activity, likely attributable to its antioxidant properties [25].

# Antiparkinson Activity

*Nardostachys jatamansi* may have potential therapeutic benefits in managing Parkinson's disease, particularly in alleviating symptoms such as tremors and rigidity. Its mechanism of action is thought to involve the protection of dopaminergic neurons and the reduction of oxidative stress in the brain, which could enhance motor function and improve the quality of life for individuals affected by Parkinson's disease.

In a study, rats were treated with *Nardostachys jatamansi* root extracts at doses of 200, 400, and 600 mg/kg body weight for three weeks. On day 21, 2 ml of 6-hydroxydopamine (6- OHDA) [12 mg in 0.01% ascorbic acid-saline] was infused into the right striatum, while a sham-operated group received

2 μl of the vehicle. Three weeks following the 6-OHDA injection, the rats were assessed for neurobehavioral activity and were sacrificed six weeks later for the measurement of lipid peroxidation, reduced glutathione levels, and the activities of glutathione transferase, glutathione reductase, and catalase. Additionally, catecholamine quantification, dopaminergic D2 receptor binding, and tyrosine hydroxylase expression were evaluated. The increase in drug-induced rotations, along with a decrease in locomotor activity and muscle coordination resulting from the 6-OHDA injections, were significantly and dose-dependently restored by treatment with *Nardostachys jatamansi* [26].

# Anticonvulsant Activity

*Nardostachys jatamansi* shows promise as a natural anticonvulsant, offering relief from seizures and convulsions. Its likely mechanism of action includes the regulation of neurotransmitter release and the enhancement of inhibitory pathways in the brain, which helps to stabilize neuronal excitability. The anticonvulsant activity of the ethanolic extract from the roots of *Nardostachys jatamansi* was evaluated in a study. The findings revealed a significant increase in the seizure threshold as determined by the maximal electroshock seizure model, indicated by a decrease in the extension/flexion ratio. However, the extract was not effective against seizures induced by pentylenetetrazole. Furthermore, when rats were pre-treated with phenytoin at doses of 12.5, 25, 50, and 75 mg/kg in conjunction with 50 mg/kg of *Nardostachys jatamansi* root extract, there was a notable increase in the protective index of phenytoin, rising from 3.62 to 13.17. Dose-response studies showed that both phenytoin alone and in combination with *Nardostachys jatamansi* extract affected serum levels of phenytoin, clearly demonstrating the synergistic effects of both treatments [27].

1. **Anti-hyperglycemic Effect/Antidiabetic Activity** *Nardostachys jatamansi*, commonly known as spikenard, possesses properties that may aid in the management of blood sugar levels, making it potentially beneficial for individuals with diabetes. The mechanism behind this effect involves multiple pathways: enhancing insulin sensitivity, which allows cells to respond more effectively to insulin; increasing glucose uptake in peripheral tissues, thereby removing glucose from the bloodstream; and inhibiting gluconeogenesis in the liver, which reduces the liver's production of glucose. A study using *Nardostachys jatamansi* root extract on rats at

dosages of 200mg/kg, 800mg/kg, and 1200mg/kg over a 10- day period revealed that the 1200mg/kg dose exhibited significant antihyperglycemic effects compared to a control group of rats with induced diabetes. Furthermore, the study found no toxic effects even at a much higher dose of 3000mg/kg, indicating a favorable safety profile. These findings suggest that *Nardostachys jatamansi* could be a safe and effective adjunct in managing hyperglycemia [27].

# Effect on Estrogen and Hair Growth

*Nardostachys jatamansi* may promote hair growth by influencing hormonal balance, especially estrogen levels. It is believed that the herb stimulates hair follicles and extends the active growth phase (anagen) by interacting with estrogen receptors. Studies on *Nardostachys jatamansi* root extract have demonstrated its hair growth promotion activities, particularly in the context of hair loss resulting from cancer treatments.

# Nootropic Activity

*Nardostachys jatamansi* may enhance memory, learning, and overall cognitive function, thereby improving brain health. This is potentially achieved by improving cerebral blood flow and boosting neuronal plasticity. Research involving the administration of *Nardostachys jatamansi* root extract to young and aged mice at doses of 50, 100, and 200mg/kg for 7 days showed that the 200mg/kg dose significantly improved learning and memory in young mice. Additionally, this dose reversed amnesia induced by diazepam (1mg/kg, i.p.) and scopolamine (0.4mg/kg).

# Anticancer Activity

Early research suggests that *Nardostachys jatamansi* might have anticancer properties by preventing cancer cells from multiplying. The herb may trigger apoptosis in cancer cells and hinder tumor growth, possibly due to its bioactive compounds. Studies using *Nardostachys jatamansi* root extract at concentrations of 30mg/ml and 100mg/ml demonstrated antiproliferative effects against two neuroblastoma human cancer cell lines, with growth inhibition rates of 54% and 91% against IMR-32 cells, and 45% and 82% against SKN-SH cells, respectively, as measured by the SRB assay.

# Radioprotective Activity

*Nardostachys jatamansi* may provide protection against radiation damage because of its antioxidant properties, making it potentially useful during radiation therapy. The herb works by scavenging free radicals produced by radiation, which reduces cellular damage. In a study using Swiss albino mice exposed to 6Gy of electron beam radiation (EBR), *Nardostachys jatamansi* root extract was tested. A survival assay determined the lethal dose for EBR, and the dose reduction factor (DRF) of the Jatamansi extract was calculated. The DRF was found by comparing the LD50 (lethal dose for 50% of the subjects) of EBR with and without treatment using *Nardostachys jatamansi* extract [28].

# Conclusion

A remarkable herb with significant therapeutic potential and long history is *Nardostachys jatamansi* (Indian spikenard). Supported by contemporary scientific research and rooted in traditional Ayurvedic medicine, this plant provides a broad spectrum of health advantages, from neuroprotective, hepatoprotective, and cardiovascular effects to antibacterial

and anti-inflammatory qualities. Key molecules of great relevance in these health advantages include jatamansone and nardostachone, which highlight the plant's varied and strong chemical profile.

*Nardostachys jatamansi* is prized in Ayurveda for its capacity to harmonise the body's energies, calm the mind, and promote physical and psychological health. From reducing pain and boosting cognitive ability to treating disorders impacting the nervous, digestive, and circulatory systems, it is well known to aid with a range of problems.

Recent research supporting these age-old applications shows that *Nardostachys jatamansi* possesses a broad spectrum of pharmacological activity, including antifungal, antioxidant, depressive, and anticancer properties. Positioned as an interesting herb for future medicinal use, it shows potential for controlling chronic disorders, including diabetes, hypertension, and neurodegenerative diseases.

Although the data supporting its therapeutic worth is compelling, more study-especially clinical trials-is required to understand how *Nardostachys jatamansi* functions in the body completely and to validate its safety and efficacy in human treatments. Further research on this ancient herb might make it a valuable tool for creating novel, plant-based treatments for contemporary medical problems.

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