Reviewing the medicinal potential of *Valeriana jatamansi* Jones: its traditional uses, phytochemistry, and pharmacological activities

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**Abstract**

**Objectives:** To gather updated information on the traditional uses, phytochemistry, and pharmacological activities of *Valeriana jatamansi* Jones. 

**Background:** *V. jatamansi* is indigenous to the Himalayas immensely used as traditional folk remedy. It contains a variety of secondary metabolites that give it a high medicinal and therapeutic values. For the purpose of collecting relevant information on *V. jatamansi*, a comprehensive literature search was conducted. Based on ethnomedical sources and historical records, traditional uses were compiled. Scientific articles and databases were consulted for phytochemical data. In order to assess the plant’s therapeutic properties, pharmacological studies were reviewed.

**Summary:** The botanical is known for its ethnomedical uses ranging from sedative and anxiolytic effects to treating insomnia, epilepsy, and gastrointestinal disorders. Indigenous healing practices rely heavily on its traditional uses. Based on the phytochemical analysis, it contains a diverse array of bioactive compounds, including sesquiterpenoids and iridoids. Valeric acid and jatamansinol, among other compounds, contribute to its therapeutic potential. A broad spectrum of pharmacological activities is found including anxiety-relieving, sedative, anti-inflammatory, neuroprotective, and antimicrobial effects.

**Outlook:** Based on the evidence supporting ethnomedical uses of *V. jatamansi*, its immense biopotential and multiple pharmacological roles, standard clinical trials are required to evaluate its therapeutic potential.

**Keywords:** Valeriana jatamansi; traditional knowledge; phytochemistry; pharmacology; essential oils

**Abbreviations**

IBS, Irritable Bowel Syndromes; ORS, Oral Rehydration Salts; HPLC, High-pressure liquid chromatography; CCBs, Calcium Channel blockers; PPI, Proton Pump Inhibitors; Mn, Millimeter; NREM, Non-Rapid Eye Movement; MCF, Michigan Cancer Foundation; MDA-MB, Malondialdehyde-Metastatic Breast; Bel, Biological Expression Language; HCT, Hematocrit; IC, Irreducible Complexity; PC, Plasticoycin; GLC, Gas Liquid Chromatography; ATP, Adenosine Triphosphate; S-HA, S-Hydroxy Indole Acetic Acid; S-HT, S-Hydroxytryptamine; CNS, Central Nervous System; PTZ, Pentyleneetrazol-induced Seizure; GABA, Gamma-aminobutyric acid; CDCl3, Cobalt Chloride; NMDA, N-Methyl-D-aspartate; PD, Parkinson's disease; ROS, Reactive Oxygen Species; DPPH, Diphenylpicrylhydrazyl; TRAP, Twin Reversed Arterial Perfusion; ISSR, In-Situ Slum Redevelopment; OH, Hydroxide; ABTS, 2, 2’-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid); MIC, Minimum inhibitory concentrations; HPA, Hypothalamic-Pituitary Adrenal Axis; CRH, Corticotrophin Releasing Hormone; BDNF, Brain-Derived Neurotrophic Factor; CREB, Camp Response Element Binding Protein; BDNF, Brain-Derived Neurotrophic Factor; ERK, Extracellular Signal Regulated Kinase; HCV, Hepatitis C Virus.

**Citation**


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Introduction

The widespread use of natural plant treatments has increased the demand for knowledge about medicinal plant traits and applications. Medicinal plants are extremely important in the health care system of underdeveloped countries for treating disorders. In the Rigveda, Charka Samhita, and current medical systems Valeriana jatamansi has a long history of medicinal herb usage. V. jatamansi (synonym V. wallichii) is a significant therapeutic and sweet-smelling plant in the Himalayan region. This plant belonging to the Valerianaceae family grows at elevations of 1000–3000 m [1]. A popular name for V. jatamansi is Tagar in Sanskrit, Mushkbala in Hindi or Sugandhbala in Hindi. This is a wild plant used medicinally, it provides a valid source for herbal marketplaces and primary medical treatments and household economy but it is traded and harvested without considering its sustainability [2]. V. jatamansi plant is perennial, dioecious, tetraploid, monoecious or polygamous. V. jatamansi is an aromatic plant that grows to 50 cm. The rootstock roots are thick, long, fibrous, and knotted in irregular circular ridges. This plant contains many stems from 15 to 45 cm. There are two types of leaves: cauline and radical. While cauline leaves are few, tiny, whole, and lobed, radical leaves are cordate, ovate, 2.5–8 cm, long-stalked, toothed and sinuate (http://vikaspedia.in) in Figure 1. V. jatamansi possesses diverse genetic and morphological features and many biologically active compounds [3, 4]. The colour of V. jatamansi flowers is white and pink. They appearing between April and July while the fruiting season runs from June to September and the rhizome is ready to collect between from matured rhizomes, the plant yields 0.3–2.1% of essential oils (v/w), which have a woody, musky, balsamic, and sweet odour [4].

Distribution status

V. jatamansi is found everywhere including Afghanistan, Burma, Southwest China, and a small portion of the Indian Himalayan region. V. jatamansi is native to subtropical and temperate regions of Northern India, Nepal, China (Central and Western China, Tibet) Bhutan, Myanmar, Afghanistan, and Pakistan [5]. In Nepal, 4 species of Valeriana are present, V. jatamansi, V. barbulata Diels, V. stracheyi C.B. clarke, V. hardwickii. V. Jatamansi plant grows in a diverse range of climatic conditions, such as edges of tributaries, tree shades, stream banks, moist slopes, and damp woods [6].

Botanical classification

V. jatamansi belongs to the genus Valeriana and family Valerianaceae [3].

Taxonomic classification of the V. jatamansi is “Kingdom-Plantae; Division-Tracheophyta; Subdivision-Angiospermae; Class-Magnoliopsida; Order-Dipsacales; Family-Valerianaceae; Genus-Valeriana; Species-jatamansi”.

Vernacular names

The common names of the plants vary from region to region in different languages [3]. The various common names are also tabulated in Table 1.

![Figure 1 Macro-morphology of V. jatamansi](image)

### Table 1 Vernacular names of the Valeriana jatamansi

<table>
<thead>
<tr>
<th>Vernacular names</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jatamansi, Natah, Tagarah</td>
<td>Sanskrit</td>
</tr>
<tr>
<td>Balchhari, Nihani, Mansi, Tagar Jatale, Sumaya, and Naati Jatamansi</td>
<td>Hindi</td>
</tr>
<tr>
<td>Muskroot</td>
<td>English</td>
</tr>
<tr>
<td>Zhizhu xiang, Mati xiang</td>
<td>China</td>
</tr>
<tr>
<td>Jatale, Naati jatamansi, Nandu batlu, Tagara</td>
<td>Kannada</td>
</tr>
<tr>
<td>Takaram</td>
<td>Malayalam</td>
</tr>
<tr>
<td>Thagar mool</td>
<td>Marathi</td>
</tr>
<tr>
<td>Shadamangjie, Takaram</td>
<td>Tamil</td>
</tr>
</tbody>
</table>
Methodology

The literature on Valeriana jatamansi Jones from the last 10 years was collected from different databases like Google Scholar, PubMed, ScienceDirect, Web of Science and ResearchGate using relevant keywords in search engines. The detailed methodology is illustrated in Figure 2.

Results

The literature has been collected from various databases and reviewed to synthesize the information on topic entitled “Reviewing the medicinal potential of Valeriana jatamansi Jones: its traditional uses, phytochemistry, and pharmacological activities”.

Phytochemistry

The essential chemical components of V. jatamansi roots and rhizomes are valepotriates, flavonoids and flavone glycosides, bakkenoloids type sesquiterpenoids [7] lignans, sesquiterpenoids [3], Phenolic and essential oils [8] and other phytochemicals. The quantification of some important bioactive compounds are tabulated in Table 2. There is total 21 compound are identified in V. jatamansi root/rhizome oil by MS-GS (Mass Spectrometry-Gas Chromatography). The major component is identified in this plant is Calarene/β-gurjunene, maaliol, patchouli alcohol, Seychellene, and α-Santalene and the also other compound are identified in this plant is β-patchoulene (0.4–0.8%), α-patchouline (0.8–6.6%), Viridiflorol (0.9–7.1%), Spathulene (0.7–3.4%), Kessane (2.1–3.3%), 7-epi-α selinene (0.4–1.4%), δ-guaiane (0.7–6.3%)/α-bulnesene, α-guaiene (0.7–2.3%), Bornyl acetate (0.6–15%) [4]. The various bioactive compounds from various plant parts reported in previous studies are tabulated in Table 3.
Table 2 Major bioactive compound in reported in Valeriana jatamansi

<table>
<thead>
<tr>
<th>Major chemical compound</th>
<th>Amount present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maailol</td>
<td>2.9–53.8%</td>
</tr>
<tr>
<td>Seychellene</td>
<td>4.1–27.4%</td>
</tr>
<tr>
<td>Patchouli Alcohol</td>
<td>0.4–63.7%</td>
</tr>
<tr>
<td>α-Santalene</td>
<td>0.6–12.6%</td>
</tr>
<tr>
<td>Calarene/β-gurjunene</td>
<td>3.0–20.8%</td>
</tr>
</tbody>
</table>

Table 3 List of bioactive components found in different plant parts in V. jatamansi and their associated pharmacological actions

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Bioactive compounds</th>
<th>Pharmacological actions</th>
<th>Plant Part used</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,5-Dihydroxy-3,8-epoxyvalechlorine</td>
<td>Neuroprotective effect</td>
<td>Roots</td>
<td>[10]</td>
</tr>
<tr>
<td>2</td>
<td>11-ethoxyviburtinal</td>
<td>Irritable bowel syndrome</td>
<td>Roots</td>
<td>[11]</td>
</tr>
<tr>
<td>3</td>
<td>1-β aecavaltrate</td>
<td>Antioxidant activity</td>
<td>Roots</td>
<td>[12]</td>
</tr>
<tr>
<td>4</td>
<td>Desacycbaldinal</td>
<td>Cytotoxicity</td>
<td>Roots</td>
<td>[13]</td>
</tr>
<tr>
<td>5</td>
<td>Isopatrinioside</td>
<td>Neuroprotective activity</td>
<td>Roots</td>
<td>[13]</td>
</tr>
<tr>
<td>6</td>
<td>8-Acetoxy-pathchooli alcohol</td>
<td>Antibacterial activity</td>
<td>Roots</td>
<td>[14]</td>
</tr>
<tr>
<td>7</td>
<td>Valeric acid</td>
<td>Treating dementia</td>
<td>Rhizomes</td>
<td>[15]</td>
</tr>
<tr>
<td>8</td>
<td>Isovaltral</td>
<td>Cytotoxicity</td>
<td>Roots &amp; Rhizomes</td>
<td>[16]</td>
</tr>
<tr>
<td>9</td>
<td>Valtrate hydrin B8</td>
<td>Cav2.2 Calcium channel inhibitors</td>
<td>Roots &amp; Rhizomes</td>
<td>[17]</td>
</tr>
<tr>
<td>10</td>
<td>Bakkenolide D</td>
<td>Neuroprotective effect</td>
<td>Roots &amp; Rhizomes</td>
<td>[18]</td>
</tr>
<tr>
<td>11</td>
<td>Valeriananoloid B</td>
<td>Antirotavirus</td>
<td>Roots &amp; Rhizomes</td>
<td>[19]</td>
</tr>
<tr>
<td>12</td>
<td>IVHD-Valtrate</td>
<td>Cytotoxicity/Anti-Ovarian Cancer</td>
<td>Whole Plant</td>
<td>[20–21]</td>
</tr>
<tr>
<td>13</td>
<td>Didrovaltrate acetoxy hydrin</td>
<td>Cytotoxicity</td>
<td>Whole Plant</td>
<td>[20]</td>
</tr>
<tr>
<td>14</td>
<td>Chlorovaltrate</td>
<td>Cytotoxicity/Neuroprotective effect</td>
<td>Roots/Whole Plant</td>
<td>[20]</td>
</tr>
<tr>
<td>15</td>
<td>5-Hydroxy didrovaltrate</td>
<td>Cytotoxicity</td>
<td>Whole Plant</td>
<td>[21]</td>
</tr>
</tbody>
</table>

Traditional uses

V. jatamansi plant roots and rhizomes are traditional medicine commonly use it to treat a diverse range of diseases including anxiety, hypotonic sedation, irritable bowed syndromes (IBS), epilepsy, snake poisoning and hyper lipidemia [22]. Several Ayurvedic remedies including Dasan gapek, Pipalayasava, Churna and Sudarshan etc. are said to contain the species which is also believed to treat epilepsy, obesity, skin problems, insanity and snake poisoning [8].

Pharmacological activities

The V. jatamansi plant is due to excessive and improper exploitation this plant has become an endangered species due to the global market's demand for natural resources [23]. It will soon be realized that the plant is not being harvested sustainably to meet demand due to widespread reproduction with in vitro propagation has been an alternative option for both commercial conservation and multiplication [18]. The potential use of elicitors includes methyl jasmonate and yeast extract is increasing production of secondary metabolite and yield in V. jatamansi production with aeroponics was examined [24]. For honey, flavoring tobacco, and beer is particular the extract and essential oil are utilized in the flavor, medicinal and fragrances. The various pharmacological properties have been shown in Figure 3 and Table 3.

Antidiarrheal activity. The species of V. jatamansi is well-known for its gastro protective properties which has been shown in antidiarrheal properties. According to According to international guidelines (ORS) Oral Rehydration Salts are generally used to decrease mortality and morbidity associated with acute diarrhea as well as the impact of diarrhea. However, there has been little advancement in the utilization of ORS in the last 29 years [25]. V. jatamansi was used to extract quixueling mixture that are detected by HPLC. For an oral liquid preparation that is used in clinical practice to treat diarrhea in children. Diarrhea is gastrointestinal condition that result it kill maximum 5 million people each year, mostly under the age of five [25].

Anti-Inflammatory activity. Hydro alcoholic extract of V. jatamansi leaves phytochemical screening was done for the anti-inflammatory effect was reported by [26, 27]. The highest level of anti-inflammatory activities was shown by Jatamansi valtrate R 46.7% at a dose of twenty mg/kg body composition eight hours after injecting carrageenan [26, 27]. The anti-inflammatory activity inhibits the inflammatory mediators and also suppression of acute edema. The anti-inflammatory properties of the extracts of ethanolic and methanolic were noted in another research and also it recognised for preventing the release of the mediator's bradykinins, histamine, prostaglandins and serotonin [27, 28].

Blood pressure lowering and antipasmoletic activity. The rhizomes crude extract and its fractions of V. jatamansi has blood pressure lowering and antipasmoletic properties. The lower K+ 40 Mm induced contractions were completely relaxing in the 20 Mm test against high K+ 80 mM-induced contractions [27, 28].

Sleeping and tranquillizing effect. According to some reports V. jatamansi is beneficial in treating a range of human sleeping disorders. A sedative effect of V. jatamansi are due to the presence of iridiodes glycosides & valerenic acids. Clinical studies on V. jatamansi have shown that root extract decreases sleep latency & enhances sleep quality, making If it is beneficial for treating insomnia and anxiety. According to the findings of the research, the root extract significantly reduced sleep latency, increased total sleep and non-rapid eye movement (NREM) sleep duration & decreased waking duration in the
Pharmacology inhibition, including the system modifying vitro iridoid between binding studied, than expression the property epilepsy 31)

Extracts may and MDAMB.231) K-ATP stimulation. According vitro via techniques. and the on 2023;3(4):23 immunity. the from been of anti-tumour, particularly this digestive the hot-plate substances, a It in improving anti-inflammation, anti-virus benzodiazepine Research hot to have the for MDAMB.453 the water to to the group, Among jatamansi expression. noted limbs, which cytotoxicity properties activating group, in two the anterior sleep activity decrease

Figure 3 Pharmacological properties of V. jatamansi

V. jatamansi Bioactive Compounds

Valepotriates, flavones or flavone glycosides, lignans, bakkenolide, sesquiterpenoids, phenolic compounds, and terpinoids.

Pharmacological action

Neuroprotective \ Anti Depressants

Hepatoprotective

Anti cancerous/ Anti Tumor

Antimicrobial

Anti-diabetic
treated group, improving sleep quality and modifying brain monoamine levels [28].

Antitumor activity. V. jatamansi showed decrease cytotoxicity to human breast epithelial cells (MCF-10A) & concentration-dependent inhibition comparing MCF-7 and triple negative breast cancer cell lines (MDA-MB-468, MDA-MB-453 & MDA-MB-231) in terms of growth and proliferative rate using in vitro and in vitro techniques. Different substances, particularly valepotriates derived from V. jatamansi have demonstrated varied degrees of inhibiting effects on the development and spread of cancer cells [29]. The published data of V. jatamansi on the mild cytotoxic effects of cholovaltrates, repesan and chlorovaltrate on lung adenocarcinoma, hepatoma (Bel 7402) cell lines, metastatic prostate cancer (PC3M) & colon cancer (HCT8) with IC50 values range between 0.88 to 9.75 µM. Additionally, the semi-chronic toxicity investigation found no link between the blood biochemical indexes & hematology, the toxic effect of IRFV and organ damage [29, 30].

Systemic Disorder. V. jatamansi herb antispasmodic and hypotensive properties which may have been mediated via activating K-ATP channels, suggest its use in treating cardiovascular & gastrointestinal disorders [31]. The mechanism by which the therapeutic effect of V. jatamansi iridoid on irritable bowel syndrome may be related to the regulating effect on 5HT levels from the digestive to the central nervous system [30, 31]. According to several investigations, oligosaccharides have the bioactivity of modulating gastrointestinal disorders, Oligosaccharides are currently in the spotlight due to their qualities including anti-inflammation, anti-tumor, anti-virus & enhancing immunity. Among the 10 oligosaccharides studied, this species verbascoses and galactose content was particularly high which may indicate that it has actions that enhance gut microbiota [11]. But compared to the model group, a decrease in 5-HIAA/5-HT was seen in serum and the colon indicating that the effect of transmission of 5-HT from the gastrointestinal process to the central nervous system (CNS) may be relevant to the use of iridoid in the treatment of IBS [30, 31]. The chloroform and water fractions substantially repressed increase K+ (80 Mm)–induced contractions, but low K+ completely suppressed the glibenclamide and selective-sensitive relaxation (20 mM)–induced contraction of rabbit aorta showing that the blood pressure lowering effects were likely mediated by ATP-dependent K+ channel activation rather than Ca (Calcium) channel inhibition, the property of the extract might assist treat Cardiovascular disorders [32].

Analgesic activity. Extracts made from the plant were tested for their analgesic effects using hot-plate testing in comparison to water decoction, moving and lifting of two anterior limbs, hot plate, radiation heat stimulation. According to the finding, the water decoction could have a considerable impact on analgesia & positively activate rabbit intestinal muscle in vitro. Additionally, analgesic action of flavonoids extract was demonstrated by the acetic acid squeezing test & warm-plate test in the rabbit’s gut in vitro. Since that it can act as a functional group for the benzodiazepine binding sites the bioactive flavonoid 6-methylapigenin which was extracted from the roots & rhizomes may have calming effects [3]. In rats with maximal electroshock-induced seizures and PTZ-induced epilepsy, GABA_A, valepotriates increased the expression of Bel-2, decrease the expression of caspase-3 protein, while exerting relatively insignificant effect on GABA_A expression. This suggests that valepotriates beneficial effects on the inhibition of neuronal apoptosis and GABA regulation may be associated with epilepsy [32]. It must be noted that the administration of the extract raised the brain’s GABA level, making the connection between GABA expression and anti-convulsion activity apparent [33].

Stress and Neuroprotective effects. Numerous substances extracted from V. jatamansi have demonstrated varied degrees of effectiveness in reducing stress and neuroprotective effects. The plant extract has been
shown to lessen anxiety, stress and also sadness [33]. By giving the extract to mice orally the extract demonstrated decreased central nervous system activity. In terms of reduced infarct size, motor coordination, lateral push response, improved short-term memory & its aqueous extract reduced significantly the effects of ischemia and reperfusion-induced in cerebral injury. In human dopaminergic neuroblastoma SH-SY5Y cells, benokanolides, valeractones and the root hairs of V. jatamansi showed improved neuroprotective properties against MPP⁺ induced neurotoxicity when benokanolide-H extracts were used [10]. Additionally, isopatrinioside from V. jatamansi showed modest neuroprotective properties in PC12 cells against CoCl₂-induced death of neuronal cells [34]. By reducing Streptozotocin-induced neurodegeneration in the intracerebroventricular region of Wistar rats, valeric acid extracted from V. jatamansi behave as an NMDA receptor antagonist & exhibit neuroprotective effects and also share similarities in GAMA & valeric acid structure [34, 35]. Similar results showed that the whole plant aqueous extract mildly reduced the severity of cerebral injury in global cerebral ischaemia mice with cerebral infarct sizes of 14.9% compared to control group mice's infarct sizes of 34.2%, indicating that the extract may have neuroprotective effects [34, 35]. A second investigation involved giving MPTP-induced Parkinsonism’s disease (PD) mouse models of the plant V. jatamansi Jones rhizome extract (VRE) orally. The results of changes in TH protein, striatal dopamine and tyrosine hydroxylase levels, amelioration of ROS and LPO, and improvement in antioxidant levels in PD mice successfully demonstrated that the neuroprotective effect of VRE may be attained through its capacity to enhance antioxidant activities & to lessen neuroinflammation [35].

Antioxidant properties. Strong evidence of anti-oxidant properties has been found in more unstable compounds that have been isolated from the species roots and rhizomes. A recent study compared the roots of V. jatamansi which were transplanted into the Indian west Himalaya from the environment’s natural resources. The result showed that the roots from the planted source had greater average flavonoids, phenols, and apparent antioxidant properties, but had lower nutritive value and an impact on DPPH’s antioxidant capacity [8]. Another study was conducted on three iridoid valepotriates (1-β acetavurate, valrate & acetavurate). After the iridoid valepotriates degraded, it was found that there was a decrease in their ability to scavenge free radicals, cell apoptosis & cytotoxicity. It was believed that a potential mechanism for antioxidant activities would be connected to GABAergic signalling pathways [36]. To compare the antioxidant activity with TRAP (Twin reversed arterial perfusion), DPPH (2, 2-Diphenylpicrylhydrazyl) and AFTS among five dispersed populations of V. jatamansi, ISSR marker were used. The finding suggested that there is apparent variety throughout the population, and only three ISSR markers (17989B-8, HB8-5 and HB12-1) with high mean genetic diversity were observed to positively correlate with antioxidant activity in the DPPH assay [3]. Additionally, V. jatamansi aerial and root sections in methanol extract [37], essential oil, supercritical CO₂ fluid all demonstrated antioxidant properties [36, 37].

Antimicrobial activity. The main components of V. jatamansi and their antibacterial properties are notable. Compared to gentamicin (5 µg/mL MIC), the sesquiterpenoid 8-aceotxylpatchoulch alcohol demonstrated only a minimal number of inhibitory effects against Pseudomonas aeruginosa (64 µg/mL MIC), and moderate inhibitory activity against B16 with an IC₅₀ value of 31.43 µg/mL compared to ciprofloxin (15.26 µg/mL) [17]. Positive control (Amicillin & Erythromycin) was found to be less effective than antimicrobial activity in various solvent systems (Water, Chloroform, Methanol & hexane). Staphylococcus aureus was specifically affected by the antimicrobial activity of V. jatamansi aerial root extract in the chloroform fraction, but the Bacillus subtilis was more effectively affected in the hexane fraction [38]. The essential oil of V. jatamansi both showed potential antibacterial action against Candida albicans, Staphylococcus epidermidis, E. coli, Pseudomonas aeruginosa and staphylococcus aureus [38].

Antidepressant activity. The bioactive substances iridoids, flavonoids, valepotriates and essential oil composition of V. jatamansi are primarily responsible for antidepressant activity. Antidepressant effects of total iridoids of V. jatamansi and preliminarily investigated the effects of gut microbiota on their antidepressant effects using a chronic, unpredictable mild-stress mouse model. Mice were given 5.7, 11.4, or 22.9 mg/kg TIV for 1 week. Fluoxetine (2.6 mg/kg) served as a positive control. Body weight was measured, and behavioural tests including SPT (standard penetration test) and TST (tail suspension test) were applied. Colon pathology was assessed through hematoxylin-eosin staining. Additionally, levels of serotonin (5-hydroxytryptamine, 5-HT), noradrenaline (NE), substance P (SP) and corticotropin-releasing factor (CRF) in the hippocampus and colon were measured by ELISA [3, 11, 41]. While depression is a widespread condition, there are currently therapeutic drugs available to treat it. These natural drugs are more effective and have less chances of toxicity and have advantage over other existing drugs. About 64–71% of depressed people experience success, however major side effects could restrict available therapy options.

Anxiolytic property. By giving rats varying doses of valtrate orally, followed by exposure to elevated plus maze and open field test, it was possible to study the anxiolytic effects of the drug in rats. To further explore the HPA (Hypothalamic-pituitary adrenal axis) dysfunction, the blood levels of CS and -endorphin (EP) were higher in the anxiety model than the control model. Corticotropic-releasing hormone (CRH) and the neuropeptide orexin showed decreased expression in rats given an ethanol extract of the roots or rhizomes, suggesting that the V. jatamansi Jones extract may have a beneficial effect on the HPA axis [3, 11]. According to research IEVF (12, 9, 6 mg/kg, for 7 days) of V. jatamansi may reduce the excitability of the CNS (Central Nervous System) by raising the GABA level [40]. Additionally, high dose (4 g/kg) raised the protein level of (BDNF) Brain-derived neurotrophic factor in the hippocampus (0.550.05) of rats and (0.540.06) in the cortex, as compare to the model group (0.340.03 & 0.370.3, respectively), suggesting that the mechanism of APCP anti-anxiety may include down-regulation of CREB/BDNF and ERK signal pathway [3, 40]. Compared to the normal group the expression of the Apaf1, Bax, Bcl2, Ets1 and E1K1 genes was upregulated in the group while expression of genes was aberrant in the alternative groups. These finding suggested the ability of the species can have a significant role in controlling the aberrant gene expression linked to apoptosis in the anxiety model in rat [33, 39, 40].

Discussion

This updated review mainly focuses on ethnobotanical properties, phytochemical activity and major chemical compound of V. jatamansi and their biological properties. This particular species has been extensively utilized in both modern and traditional medicine especially as a flavoring, analgesic and fragrance ingredient. Various pharmacological investigation on V. jatamansi showed that it has the ability to treat number of illnesses, including stress, mental disorder, including stress & gastrointestinal disorders. However, there is a lack of long-term clinical trials to validate these results. This species may be used as a source of drugs for a variety of illness, according to pharmacological research on V. jatamansi. To ensure its safety and potential in contemporary therapies and more clinical investigations on this species & its chemical are imperative. Several early reports on other biological features, such as anti diarrheal, ant-noceicive, analgesic, anti-HCV and lipid metabolism regulating activities have recently discovered in addition to its traditional medical uses.

Conclusion

This study concluded that Valeriana jatamansi Jones is an amazing plant with diverse pharmacological properties, a rich tapestry of traditional uses, and intricate phytochemistry. Traditionally used to treat a wide range of health concerns, this herb is rooted in traditional medicine. Based on its phytochemical composition, it contains a
number of compounds, such as valepotriates, sesquiterpenes, and alkaloids, which contribute to its therapeutic properties. Pharmacological studies demonstrate a broad range of activities, such as anti-inflammatory, sedative, anti-inflammatory drugs, and neuroprotective. It opens up opportunities for further research and development in the pharmaceutical industry in addition to validating the herb’s traditional uses. In order to fully understand V. jatamansi, we must consider both its historical significance and its contemporary relevance in modern medicine.

References

27. Singh B, Sabu PM, Sharma RA. Anti-Inflammation and Antimicrobial Constituents from the Roots and Their Production in Callus Cultures of Valeriana jatamansi Jones. CBC 2020;16(5):671–680. Available at: https://www.tmrjournals.com/pr
http://doi.org/10.2174/1573407215666190219101450


31. Yan, X, Hong, Y, Shi, J, et al. Influence of iridoid from *Valeriana jatamansi* on 5-HT and 5-HIAA in rats with irritable bowel syndrome. *Journal of Chinese Materia Medica* 2011;36:1235–1238. Available at: https://kns.cnki.net/kcms2/article/abstract?v=z-q19IQZWGnnG0kWhgbsrM8xb_sp8p4Xm1Cy83OLJbZaVKNPVRVXK9AAfz75TMvmVd6FIUZKe6uqKQ6lhx_sBRqZaWXJWw4ncEhVu3a0sExSVKTI2eKUaUIWY6fRNQXM=uniplatform=NZKPR&language=CHS


