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Classical Insights, Botanical Identification, Chemical Composition and Therapeutic Effectiveness of Dinesavalli: A Key Ayurvedic Medicine

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ABSTRACT

Dineśavallī or Vēṁpāta is a widely recognized Ayurvedic herb used extensively in South India for treating skin-related ailments. In Kerala, it features prominently in various formulations, either as a standalone herb or in combination with others. Notably, neither the bṛhatrayī nor laghutrayī directly mention dineśavallī or Vēṁpāta. Previous studies have identified dineśavallī of South India with 'Ratanjot,' a herbal dye from North India. Literature suggests that the roots of Arnebia and Alkanna, sold as 'Ratanjot,' are linked to dineśavallī (Vēṁpāta). Traditionally sourced from Ventilago madraspatana Gaertn. of the Rhamnaceae family, dineśavallī (Vēṁpāta) is also associated locally with allied species like Ventilago bombaiensis Dalzell. and Ventilago denticulata Willd. This review examines major classical Ayurvedic texts and peer-reviewed articles to elucidate the botanical identity, chemical constituents, pharmacological properties, and therapeutic efficacy of dineśavallī or Vēṁpāta, providing comprehensive insights into its use in traditional medicine.

Keywords: Dinesavalli, Vempata, Ventilago, Ratanjot, Ayurveda, Controversy.

INTRODUCTION

Ayurveda, known as one of the oldest healing sciences, derives its name from Sanskrit, meaning "The Science of Life." Originating over 5,000 years ago in India, it is often referred to as the "Mother of All Healing," stemming from the ancient Vedic culture. This knowledge was traditionally passed down through an oral tradition from masters to disciples over millennia. Ayurveda emphasizes prevention and advocates for maintaining health through a balanced life, correct thinking, diet, lifestyle adjustments, and the use of herbal remedies.

The classical Ayurvedic texts, Carakasaṃhitā, Suśrutasaṃhitā, and Aṣṭāngahṛdaya, mention a vast array of medicinal plants, many of which remain unidentified today. Urbanization and the loss of natural habitat contact have led to confusion regarding the accurate identification of these plants. Later publications indiscriminately use Sanskrit names and synonyms not found in ancient texts, further complicating the matter. Misinterpretations also contribute to irregularities in identifying raw materials, varying among practitioners [1].

India's linguistic diversity and reliance on tribal and folk medicine add to the challenge of plant nomenclature. Similar plant names across different languages sometimes lead to confusion. Descriptions in ancient literature often include verses with multiple synonyms, complicating plant identification and occasionally leading to the mistaken identification of fictional plants. Establishing clear identification parameters is crucial to differentiate among plants with similar names, ensuring the efficacy of herbal preparations derived from specific plant extracts known for their medicinal properties [2].

METHODS

All major Ayurvedic samhitās and selected traditional texts from Kerala were meticulously reviewed to compile formulations containing vēṁpāta.

Vēṁpāta – Classical View

Vēṁpāta, commonly known as red creeper, does not exhibit visible redness despite its name. It is extensively utilized in the preparation of medicinal oils. When the root of this plant is infused in coconut oil, it imparts a red color, hence the name. In Ayurvedic texts originating from Kerala, vēṁpāṭa is often referred to in its Sanskritized form as dineśavallī. However, there are no direct mentions of dineśavallī in the primary Ayurvedic texts (bṛhattrayī) such as the Carakasaṃhitā, Suśrutasaṃhitā, and Aṣṭāngahṛdaya, nor in the minor texts (laghutrayī) including the Mādhavanidāna, Śārṅgadharasaṃhitā, and Bhāvaprakāśa[3].

According to Warrier et al. (2004), synonyms for vēṁpāta include dineśavallī, arkavallī, and raktavallī. Notably, the terms dinēśa and arka are synonymous with the sun. Vēṁpāta exhibits properties such as kaṣāya and tikta rasa, guru guṇa, uṣṇa vīrya, and therapeutic actions including dīpana, pācana, agnivardhana, and kaphahara. It is beneficial for treating conditions such as dyspepsia, colic, flatulence, erysipelas, leprosy, scabies, pruritus, skin diseases, fever, and general debility [4].

While reviewing the bṛhattrayī, references to sūryavallī and tāmravallī are found in the Suśrutasaṃhitā and Aṣṭāṅgahṛdaya. Sūryavallī is mentioned in the sūtra sthāna, cikitsā sthāna, and kalpa sthāna of the Suśrutasaṃhitā, describing it as having madhura rasa, vipāka, and sītavīrya properties that pacify vāta and pitta. In the cikitsā and kalpa sthāna, it is referred to as patola sadṛśavallī[5]. Tāmravallī is mentioned in the śārīrasthāna of Suśrutasaṃhitā, interpreted by Ḍalhana as manjiṣṭhā. In the Aṣṭāṅgahṛdaya, references to tāmravallī and sūryavallī are found in the śārīrasthāna and sūtra sthāna, respectively, with Aruṇadatta and Hēmādṛī considering tāmravallī as manjiṣṭhā. Hēmādṛī's commentary also describes sūryavallī as having patōlasadṛśa patra, while Aruṇadatta mentions karavīrākārapuṣpa [6].
In the Kairalīvyākhyāna on Aṣṭāṅgahṛdaya, sūryavallī mentioned in the kośātakyādiyavāgu is interpreted as vēṁpāṭa, marking it as the first direct reference to the name vēṁpāṭa. Additionally[7], in a later Malayalam commentary on Aṣṭāṅgahṛdaya by Ceppāṭṭ AcyutaVarier, the drug named sūryavallī is translated as vēṁpāṭa. Direct references to vēṁpāta can also be found in Malayalam works such as Cikitsamañjari, Sahasrayōgaṃ,

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Vaidyamanōrama, Yōgāmṛtaṃ, Yōgasāraṃ, Âlatturmanipravālaṃ, and Sarvarōgacikitsāraṭnam [8].

PROPERTIES AND ACTION

Table No. 2: Rasadipañchakas of Vēṁpāta35

Rasa	*Guṇa*	*Vīrya*	*Vipāka*	*Karma*
Kaṣāya, Tikta	*Laghu*	*Sīta*	*Kaṭu*	*Tvagrōgahara*

Table No. 3: Rasadipañchakas of Dineśavallī3

Rasa	*Guṇa*	*Vīrya*	*Vipāka*	*Karma*
Kaṣāya, Tikta	*Guru*	*Uṣṇa*	*Kaṭu*	*Dīpana, Pāchana, Varnya, Kaphahara.*

THERAPEUTIC INDICATION3 Gulma, Śūla, Visarpa, Kuṣṭha, Kaṇḍū, Pāma, Viṣa. In the text 'Oushadasasyangalude Lokam' by Dr. S. Neshamani, the author has mentioned about Vēṁpāta with kaṣāya, tiktarasa and laghu sīta guṇa. Whereas, in the book 'Indian Medicinal Plants' Vēṁpāta is mentioned by the name of Dineśavalli with kaṣāya, tiṭtarasa and guruguṇa and uṣṇa vīrya.36 BOTANICAL SOURCE Dineśavallī (vēṁpāta) is assumed to be sourced from Ventilago madraspatana Gaertn. belonging to Rhamnaceae family [9].

ANTICANCER ACTIVITY

Due to the toxicity associated with arnebin-1, various metal complexes of arnebin-1 were synthesized and assessed for their anticancer efficacy and ability to inhibit passive cutaneous anaphylaxis. Zinc (II) and manganese (II) complexes exhibited notable anticancer activity against Leukemia P388. Arnebin alone inhibited the antipassive cutaneous anaphylactic reaction in mice by up to 90%, whereas its metal complexes showed inhibition ranging from 30% to 60%. The 50% ethanolic extract of the root and its naphthaquinones, including arnebin 1, 2, 3, and 4, were studied in a rat Walker carcinoma 256 model. Arnebin-1 and arnebin-3 demonstrated significant anticancer effects both in vitro and in rat Walker tumor cells, with a reduction in tumor weights and inhibition indices ranging between 68% to 79%. Combining arnebin-1 with mitomycin-C and sulphone isothiocyanate enhanced its efficacy against rat Walker tumor more than either drug alone at comparable dosages. Arnebin-2 and arnebin-4 did not exhibit significant activity [10].

WOUND HEALING

The wound healing potential of arnebin-1 was evaluated using a cutaneous punch wound model. Topical application of arnebin-1 daily on wounds, whether in hydrocortisone-treated or untreated animals, significantly accelerated wound healing compared to controls. Arnebin-1 treatment promoted cell proliferation, migration, vessel formation, and the formation of thick granulation tissue and reepithelialization of wounds. It increased the synthesis of collagen, fibronectin, and transforming growth factor (TGF)-β1 compared to untreated controls. The upregulation of TGF-β1 at both translational and transcriptional levels by

arnebin-1 likely contributed to enhanced wound healing in both normal and impaired wound repair scenarios [11].

PHARMACOLOGICAL STUDIES OF *Arnebia benthamii*

FREE RADICAL SCAVENGING ACTIVITY

Research investigated the radical scavenging potential of the traditional medicinal herb Arnebia benthamii and its ability to protect against DNA damage. High-performance liquid chromatography (HPLC) confirmed the presence of shikonin (5,8-dihydroxy-2-(1-hydroxy-4-methyl-3-pentenyl)-1,4-naphthoquinone) in the roots of the plant. The ethyl acetate extract, containing 50 µg/ml of shikonin, exhibited complete protection of DNA by quenching hydroxyl radicals. The extract's activity was compared with synthetic shikonin, validating its presence as a dye-like substance that enhances the antioxidant defense system. Additionally, the extract showed significant activity as a DPPH radical scavenger and hydroxyl radical scavenger. It demonstrated potent reducing power (Fe (3+)-Fe(2+)) and efficiently inhibited lipid peroxidation (TBARS assay), suggesting its ability to prevent oxidative damage to biomolecules. The extract also provided substantial protection against plasmid and calf thymus DNA damage induced by hydroxyl radicals. Furthermore, the extract exhibited significant antibacterial activity against Escherichia coli (E. coli) compared to standard drugs [12].

3.5

Table 4: Summary of the Activities reported from the source plants and adulterants.

PLANT	ACTIVITIES
Ventilago madraspatana	Antidiabetic Activity, Antimicrobial and Antibacterial, Antioxidant Activity, Cardioprotective Effect.
Arnebia euchroma	Anticancer Effects, Anti Inflammatory Effects, Anti-Obesity Effects, Antidiabetic and Diabetic Wound-healing Activity, Cytotoxic Activity, Antioxidant Activity.
Arnebia nobilis	Antioxidant Activity, Antimicrobial Activity, Anti-skin Ageing Activity, Anticancer Activity, Wound Healing,
Arnebia benthamii	Free Radical Scavenging Activity
Alkanna tinctoria	Anticancer Activity, Wound Healing Activity, Anti-bacterial Activity, Supports and Promotes High Performance Cardiovascular Health. Antifungal and Skin healing activity.

DISCUSSION

Previous studies confirm that dineśavallī from South India corresponds to 'Ratanjot', a herbal dye used in North India. According to literature reviews, the roots of Arnebia and Alkanna are sold as 'Ratanjot' in some markets. Khatoon et al., 2003, attribute 'Ratanjot' to eight species of Boraginaceae from genera Alkanna, Arnebia, Maharanga, and Onosma, highlighting its significance in indigenous systems of medicine [1]. The root and rootstock, considered the active constituents, are noted for their anthelmintic, antipyretic, and antiseptic properties. They are traditionally used for treating burns, eczema, wounds, skin eruptions, and various ailments such as eye diseases, bronchitis, abdominal pain, and itching.

CONCLUSION

Dineśavallī, known locally as Vēṁpāta, is a widely used South Indian herb in numerous Ayurvedic formulations for skin-related conditions. Direct references to dineśavallī are absent in major Ayurvedic texts like the bṛhatrayī or laghutrayī. Through detailed analysis, the earliest reference to Vēṁpāṭa was found in the kairalivyākhyāna on the Aṣṭāṅgahṛdaya. Various synonyms for Vēṁpāṭa were identified in traditional Kerala texts, such as arkavallī and raktavallī, which are associated with the concept of 'sun'. The herb is primarily used to alleviate skin disorders and conditions of vāta-kapha origin. It possesses kaṣāya and tikta rasa qualities, with kaṣāya rasa aiding in blood purification and pacifying vitiated rakta and pitta. The herb's tikta rasa contributes to its skin-soothing properties, making it beneficial in tvakprasādana (skin-purifying) therapies. Thus, the plant referred to as dineśavallī, niśāta, sūryavallī, arkavallī, and suryāvartaka in various traditional Kerala texts is indeed Vēṁpāṭa itself.

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