



REVIEW ARTICLE

Weeds as ethnomedicine: Revisiting Kerala's ten indigenous plants called Dasapushpam

Priya Prasannakumar^{1,4*}, A. Robert Antony¹, K.M. Muhasina², Joseph Itteera³ and T.K. Hrideek⁴

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ABSTRACT

Indigenous medicine consists of medicinal information about herbs which evolved through generations among various communities prior to the advances in modern medicine. Many of these plants are now considered as weeds as they grow near waysides, agricultural and wastelands. Weeds are considered obnoxious because of their negative effects on agricultural ecosystems. However many of them like the *Dasapushpam* (from Sanskrit *dasa*, meaning 'ten', and *pushpam*, meaning 'flower'), or the ten sacred flowers, are ten herbs which are culturally special to people belonging to the state of Kerala, India. These herbs usually grow in the Western Ghats region. Many medicinal properties have been attributed to these plants which grow as weeds and are used in traditional medical practices of Ayurveda, Unani and Siddha. The plants which are called collectively as Dasapushpam are *Aerva lanata*, *Biophytum sensitivum*, *Cardiospermum halicacabum*, *Curculigo orchoides*, *Cynodon dactylon*, *Eclipta alba*, *Emilia sonchifolia*, *Evolvus alsinoides*, *Ipomoea sepriaria* and *Vernonia cinerea*. Several studies have been carried out on the individual plants as well as some plants together. This classical review aims to document the botanical nomenclatural systematics, indigenous uses and published information with respect to the phytochemical, pharmacological, and therapeutic properties of the plants belonging to Dasapushpam group. However, actual utilisation of all these plants is limited and there is a need to explore all its health benefits. These groups of plants which were common in Kerala are now difficult to find due to shrinkage of agricultural land, consideration as weeds and modernisation of home spaces. Therefore, in this review, we intended to give an up-to-date knowledge on the different bioactive metabolites from the Dasapushpam group of plants, their health-related applications, and their scope for commercial applications in herbal pharmaceutical industries.

Keywords: Indigenous medicine, Phytochemical, Pharmacological activities, Therapeutic properties

INTRODUCTION

Ethnomedicine refers to the therapies practiced in indigenous communities who make time tested, knowledgeable use of herbo-mineral resources to treat ailments (Hemmami *et al.* 2024). They are a reservoir of bioactive compounds and have found use traditionally as antimicrobial, anti-inflammatory, antidiabetic, and other therapeutics. They still hold significance as they are cost effective and have lesser side effects. The World Health Organization (WHO) has recognized and recommended the use of indigenous medicine, particularly in developing countries to achieve health for all. Many communities worldwide use indigenously sourced herbal

medicines as their sole primary health care mechanism (Sundarrajan and Bhagtaney 2023).

The Dasapushpam plants are integral to Kerala's folkloric traditions. While "Dasapushpam" refers to ten sacred flowering plants, their parts hold broader significance in healing practices. They are documented in rare texts like *Vishavaidyayotsnika*, used in traditional Vishachikitsa, a system for countering afflictions (Krishnapriya *et al.* 2019). Many of these commonly found plants have been used overlappingly as medicine and food since centuries (Sharma and Wagh 2024). Rampant depletion of natural habitat, indiscriminate harvesting for commercial purposes and seasonal occurrence have resulted in pushing these plants from homesteads to weed status (Kushalan *et al.* 2022) It is important that the wealth of this information is not lost to posterity. Hence this review focusses on an exploration about the beneficial aspects of these ten plants. Also, it studies the different bioactive compounds in extracts obtained from the different plant materials from the Dasapushpam group (Arun Raj *et al.* 2013). There is a need for bioprospecting

¹ Government Arts and Science College, Kozhinjampara, Kerala 678554, India

² JSS College of Pharmacy, Ooty, Tamil Nadu 643001, India

³ Government Ayurveda Dispensary, Kuriarutty, Palakkad, Kerala 678571, India

⁴ The Pharmaceutical Corporation (I.M) Kerala Ltd; Oushadhi, Thrissur, Kerala 680014, India

* Corresponding author email: priyaprasannak@gmail.com

for new drugs due to the problems of multiple drug resistance, side effects of existing drugs, and increasing public perception about the safety of herbal medicine. This review lists the various medicinal values of the plants by documenting their ethnomedicinal use, phytochemical properties, pharmacological activities, and their therapeutic application in indigenous systems of medicine so that it can be further utilized as a knowledge base for researchers.

Objective and methodology of this study

This review has attempted an exhaustive search of published literature through various journals, books and online databases to obtain pertinent information on the *Dasapushpam group of plants*. The search terms “Dasapushpam” were entered in PubMed (<https://pubmed.ncbi.nlm.nih.gov/>), Web of Science (<https://www.webofscience.com/>), Google Scholar (<https://scholar.google.com/>), respectively. Articles which were important from ethnobotanical, phytochemical and therapeutic standpoints were selected (Yan *et al.* 2023). Other key words included each of the individual Dasapushpam plants, ethnobotany, pharmacology, phytoconstituent and therapeutic properties. It documented their binomial nomenclature, local names, Ayurvedic benefits, phytochemical constituents, therapeutic effects, and traditional and commercial uses. The study aims to serve as foundational knowledge for medicinal plant research.

Habitat, and geographical distribution of the plants

The plants coming under the Dasapushpam category have found use in Ayurveda and other traditional systems since centuries. Also, different plant parts show variation in the concentration of different phytochemicals so that the original form of the plant usage as prescribed in classical medicine must be kept true to text. The geographical distribution, habitat and usage of the plants are discussed in (Table 1). This shows the distribution of these valuable plants in India and particularly the Western Ghats.

Ethnomedicinal and pharmacological activities of the plants

1. *Eclipta alba* L Hassk (Bhalerao 2013)

The plant belongs to the family Asteraceae and is commonly known in English as False Daisy. In Sanskrit, it is referred to as Bhringaraj, while in Malayalam, it is called Kanjunni. Its Hindi name is Bhangara, and in Bengali, it goes by Kesaraj. Additionally, in Tamil, it is known as Karissalaanakanni. *Eclipta alba* (*E. alba*) is widely used in Ayurveda and traditional medicine for promoting hair and liver health, acting as a diuretic, and treating skin issues, burns, and inflammation (Varghese *et al.* 2010). Noted as a hepatoprotective agent in the Ayurvedic Pharmacopoeia of India, it also exhibits diverse pharmacological activities, including antimicrobial, anti-stress, antioxidant, and

Table 1. Source of plants

Plant scientific name	Part used as per classical text	Habitat	Geographical distribution
<i>Eclipta alba</i> (L.) Hassk.	Shoots, leaves.	Plains, Moist Localities,	Karnataka, Kerala: all districts.
<i>Emilia sonchifolia</i> (L.)	Shoots, leaves.	Dry and moist deciduous forests, plains	Maharashtra, Karnataka, Kerala: All districts Tamil Nadu: All districts
<i>Evolvulus alsinoides</i> (L.) DC.	Whole plant	Sandy soil, dry slopes, cultivated areas, roadsides	Assam, Bihar, Maharashtra, Odisha, Gujarat, Rajasthan, Uttar Pradesh, Karnataka, Kerala: All districts, Tamil Nadu: All districts
<i>Curculigo orchoides</i> Gaertn.	Rhizome tuber	Scrub forests, roadsides, forest floors, rocky cliffs	Andhra Pradesh, Assam, Kerala, All India plains to 1600m.
<i>Cynodon dactylon</i> (Pers.)	Leaves	tropical and warm temperate regions	India: Assam, Central India, Peninsular India, Kerala: all districts.
<i>Cardiospermum halicacabum</i> (Linn.)	Shoot, leaves	Moist deciduous forests, also, in scrub jungles	India: Assam, Bihar, Gujarat, Jammu & Kashmir, Maharashtra, Manipur, Kerala, Odisha, Punjab, Rajasthan, Tamil Nadu
<i>Vernonia cinerea</i> L.	Whole plant	Deciduous Forests and also Plains, Dry Localities	Maharashtra: Common throughout Karnataka, Kerala: All districts Tamil Nadu: All districts
<i>Ipomoea sepiaria</i> Roxb.	Whole plant	Wastelands, scrub jungles, roadsides	Tropical moist deciduous regions, Andhra Pradesh, Kerala, Karnataka, Odisha.
<i>Biophytum sensitivum</i> (L.) DC.	Whole plant	Growing as weeds in moist shady parts.	Throughout India
<i>Aerva lanata</i> (L.) Juss.	Whole plant	Wastelands in plains, wayside moist places.	Maharashtra, Karnataka Kerala: All districts, Tamil Nadu: All districts.

(Source : <https://indiabiodiversity.org/>)

anthelmintic effects (Nelson *et al.* 2020). Its extracts show promise in cancer prevention, diabetes management, UV protection, and as mosquito repellents, with additional activity against bacteria and snake venom (Sajon *et al.* 2017).

2. *Emilia sonchifolia* (L.) DC. (Hussain *et al.* 2023)

The plant belongs to the family *Asteraceae* and is commonly known in English as Lilac Tassel Flower. In Sanskrit, it is referred to as Sasasruti, while in Malayalam, it is called Muyalcheviyan. Its Hindi name is Hirankhuri, and in Bengali, it is known as Sadimodi. Additionally, in Tamil, it goes by the name Muyalcevi. *Emilia sonchifolia* is traditionally used to treat ailments such as stomach upsets, tumors, night blindness, liver issues, sore throat, measles, inflammation, seizures, fever, asthma, and muscular soreness (Ogundajo *et al.* 2021). Pharmacologically, it shows broad biological activities, including antimicrobial effects against pathogens like *Staphylococcus aureus* and *Escherichia coli*. It also exhibits anticonvulsant, pain relief, anti-inflammatory, anti-diabetic, and antioxidant properties (Essien *et al.* 2020).

3. *Evolvulus alsinoides* (L.)

The plant belongs to the family *Convolvulaceae* and is commonly known in English as Dwarf Morning Glory. In Sanskrit, it is referred to as Vishnugandhi and Shankhapushpi, while in Malayalam, it is called Vishnukranthi. Its Hindi name is also Vishnukrantha, and in Bengali, it is known as Vishnugandhi. Additionally, in Tamil, it goes by the name Vishnukranthi. *Evolvulus alsinoides* is a significant ethnomedicinal plant in Ayurveda, valued for treating fevers, nervous debility, and memory loss using a whole plant decoction with cumin and milk. It is recognized as a *Medhya Rasayana* (nervine tonic) and also serves as an antihypertensive and anthelmintic agent (Siraj *et al.* 2019). Pharmacologically, its methanolic extracts exhibit potent antimicrobial and antioxidant activities, attributed to their flavonoid and alkaloid richness (Roy *et al.* 2022).

4. *Cardiospermum halicacabum* Linn. (Mruthunjaya *et al.* 2023)

The plant belongs to the family *Sapindaceae* and is commonly known in English as Balloon Vine. In Sanskrit, it is called Karnasphota, while in Malayalam, it is known as Uzhinja. Its Hindi name is Kaanphuti, and in Bengali, it goes by Lataphatkari. In Tamil, it is referred to as Mudakkarutana, in Marathi as Kaanphodi, in Telugu as Budda Gudichi, and in Kannada as Agniballi. *Cardiospermum halicacabum* is

valued in Ayurveda for its young shoots, consumed as greens or livestock feed, and extracts used for wound healing, asthma, ear pain, tumors, and fractures. It also exhibits analgesic, antipyretic, antifilarial, anti-inflammatory, and vasodepressant activities (Beula *et al.* 2019). Pharmacologically, its aqueous and alcoholic extracts show antibacterial, anti-inflammatory, antioxidant, anticancer, anti-arthritis, anti-ulcer, pain-relieving, tranquilizing, nephroprotective, and anti-diabetic properties (Shahrul *et al.* 2020).

5. *Curculigo orchoides* Gaertn. (Chauhan *et al.* 2010)

The plant belongs to the family *Hypoxidaceae* and is commonly known in English as Golden Eye Grass. In Sanskrit, it is called Musali and Talamuli, while in Malayalam, it is referred to as Nilappana. Its Hindi name is Kaali Musali, and in Bengali, it is known as Talamuli. In Tamil, it is called NilappanaiKizhangu, in Oriya as Talamuli, in Telugu as Nelatadi, and in Marathi as Bhuyimaddi. *Curculigo orchoides* is widely used in Ayurvedic medicine for its immunostimulant, hepatoprotective, anticancer, and antidiabetic properties. As a Rasayana, it balances Kapha and reduces Pitta-related burning, providing strength and acting as a stimulant (Khiem *et al.* 2024). Pharmacological studies reveal its safety, with oral administrations in mice showing a nontoxic profile and an LD50 exceeding 3 g/kg.

6. *Cynodon dactylon* (L.) Pers. (Parihar and Sharma 2021)

The plant belongs to the family *Poaceae* and is commonly known in English as Bermuda Grass. In Sanskrit, it is called Durva, while in Malayalam, it is referred to as Karukka Pullu. Its Hindi name is Doob, in Bengali it is known as Durba, and in Tamil, it is called Arugampillu. *Cynodon dactylon* is widely used in Ayurveda for various ailments, with its juice applied to stop bleeding, relieve acidity, and treat constipation (Das *et al.* 2021). It is traditionally valued for managing calculi, cough, inflammation, skin disorders, hysteria, convulsions, and snakebites, exhibiting antioxidant, wound healing, and anti-inflammatory properties. Aqueous-ethanolic concentrates aid in calcium oxalate stone reduction and kidney stone expulsion, while leaf extracts demonstrate antibacterial activity against pathogens like *Streptococcus pyogenes* and *Escherichia coli* (Chandel and Kumar 2015).

7. *Vernonia cinerea* (L.) Less (Theja and Nirmala 2024)

The plant belongs to the family *Asteraceae* and is commonly known in English as Little Ironweed. In

Sanskrit, it is called Sahadevi, while in Malayalam, it is referred to as Poovaamkurunnilla. Its Hindi name is also Sahadevi, in Bengali it is known as Kuksim, in Tamil as Puvamkuruntal, in Marathi as Sadodi, in Telugu as Gariti Kamma, and in Gujarati as Sadori. *Vernonia cinerea* is extensively used in Ayurveda to treat intermittent fever, skin discoloration, boils, and filariasis, while its leaf extracts address rheumatoid arthritis, menstrual issues, and painful urination (Dogra and Kumar 2015). Pharmacologically, its benzene fraction demonstrates broad-spectrum antibacterial activity at tested concentrations.

8. *Ipomoea sepiaria* J.König ex Roxb

The plant belongs to the family *Convolvulaceae* and is commonly known in English as Purple Morning Glory. In Sanskrit, it is referred to as Lakshmana, while in Malayalam, it is called Thiruthaali. Its Hindi name is Lachumana, in Bengali it is known as Bankalami, in Tamil as Cen-tali, in Marathi as Amti Vel, in Gujarati as Hanuman Vel, and in Oriya as Mushakani. *Ipomoea sepiaria* is traditionally used in Ayurveda for its cooling and rejuvenating effects, treating conditions like vitiated pitta, burning sensations, excessive thirst, and general debility. It is employed in hair growth formulations, sterility remedies, ulcer treatment, and as an antidote to arsenic poisoning (Cheruvathur *et al.* 2015). Pharmacologically, it exhibits antimicrobial, antioxidant, anti-inflammatory, antiasthmatic, diuretic, antiarthritic, and antidiabetic properties.

9. *Biophytum sensitivum* (L.) DC. (Sivan *et al.* 2022)

The plant belongs to the family *Oxalidaceae* and is commonly known in English as Little Tree Plant. In Sanskrit, it is referred to as Vipareetalajjaalu and Jhulapushpa, while in Malayalam, it is called Mukkutty. Its Hindi name is Lajjaalu, in Bengali it is known as Jhalaai, in Tamil as Nilaccurunki, in Marathi as Lajvanti, in Telugu as Pulicenta, and in Kannada as Horamani. *Biophytum sensitivum* is traditionally used for chest complaints, asthma, insomnia, convulsions, inflammation, tumors, chronic skin diseases, and lithiasis. Root decoctions treat gonorrhoea, while leaves, with diuretic properties, relieve strangury. Dried leaves and seeds are applied to wounds and in snake envenomation (Beldar *et al.* 2022; Jasim *et al.* 2024; Sood *et al.* 2023). Pharmacologically, its leaf extracts show antitumor, antibacterial, antioxidant, anti-diabetic, and anti-inflammatory activities.

10. *Aerva lanata* (L.) Juss. ex Schult. (Preeja *et al.* 2023)

The plant belongs to the family *Amaranthaceae* and is commonly known in English as Knot Grass. In

Sanskrit, it is referred to as Pashanabhedha, while in Malayalam, it is called Cherula. Its Hindi name is Kapurijhadi, in Bengali it is known as Durba and Chaya, in Tamil as Arugampillu, in Telugu as Pindikura, in Oriya as Lopong Arak, and in Kannada as Bili Suli Gidda. *Aerva lanata* is traditionally used in Ayurveda for treating gonorrhoea, amenorrhoea, dysmenorrhoea, glandular swellings, and as a diuretic and lithiasis remedy. Its root extracts address cough, liver congestion, jaundice, and indigestion, while whole plant decoctions are effective for pneumonia, typhoid, and prolonged fevers. Pharmacologically, its extracts show antibacterial and anthelmintic properties (Shanmuganathan *et al.* 2024), diuretic effects aiding in kidney stone expulsion, and nephroprotective activity.

Conclusion

The Dasapushpam plants hold vast therapeutic potential due to their diverse phytochemicals with activities such as antimicrobial, anti-inflammatory, antioxidant, and anticancer properties. They are underutilized despite their relevance in disease treatment and traditional use, including as edibles like *Emilia sonchifolia*. Developing drugs from these plants requires rigorous evaluation of pharmacological activity, toxicity, and clinical trials. This review emphasizes their importance for further research and innovation in phytomedicine. To produce novel drugs for a range of illnesses, researchers need to carefully examine their criteria, pharmacological activity, toxicity, and clinical trials. The potential for developing drugs from these plants is enormous, given the significant increase in global phytomedicine research. Further investigations are necessary to study the toxicity of these plants in detail before their usage in ethnomedicine and to rationalize their use as health food. Comprehensive research and development efforts should be directed towards unlocking the full potential of Dasapushpam in the realm of ethnomedicine. This review gives a clear picture of its traditional usage and the potential synergistic effects of plant combinations should be explored. Sustainable cultivation practices, public awareness, and collaboration with traditional healers are essential to fully realize the potential of these medicinal plants. In conclusion, additional exploratory research for the development of new drug molecules and their clinical investigations is highly essential. These medicinal plants are repositories of life-saving drugs, and their potential should be fully realized to contribute to the development of novel therapeutic compounds and improved healthcare solutions.

Table 2. Active principles and medicinal uses of the Dasapushpam group of plants

	Some of the active metabolites	Medicinal uses	References
<i>Evolvulus alsinoides</i>	Resveratrol, Flavonoids, Tannins Tetradecanoic acid, squalene, piperine and Hexadecanoic acid Octadecadienoic acid squalene (triterpine) Piperine	Antioxidant, antifibrinolytic, antiinflammatory, hypocholesterolemic antiarthritic activity anticancer, gastropreventive and hepatoprotective, antidepressant, anticonvulsant, antimutagenic	Varghese <i>et al.</i> 2010 Gomathi <i>et al.</i> 2015
<i>Cynodon dactylon</i>	Apigenin, Luteolin, Quercetin, Hydroquinone luteolin and apigenin hexadecanoic acid,	potent viral inhibitory activity anti-inflammatory	Yachna Sood <i>et al.</i> 2023 Das <i>et al.</i> 2021
<i>Emilia sonchifolia</i>	Caffeic acid, Chlorogenic acid Quercitrin Quercetin Rutin Flavones glycoside Senkirkine, Doronine	Antioxidant properties antiviral activity against Japanese Encephalitis Virus in vitro (Vero cells). Anti-inflammatory	Yachna Sood <i>et al.</i> 2023 Hussain <i>et al.</i> 2023
<i>Ipomoea sepiaria</i>	Resin glycosides, Flavonoids Alkaloids Phenolic Compounds Glycolipids	Antimicrobial, anticancer, Anti-inflammatory Antioxidant, Antidiabetic, Hepatoprotective Hypoglycemic,	Yachna Sood <i>et al.</i> 2023 Srivastava D. M 2017
<i>Aerva lanata</i>	Beta-sitosterol, Aervin Flavonoids Phenolic Acids Steroids Terpenoids	Antioxidant, Antidiabetic, Hepatoprotective Antimicrobial, Anti-inflammatory, Anticancer Immunomodulatory, Antirolithiatic,	Yachna Sood <i>et al.</i> 2023 Pieczykolan A <i>et al.</i> 2022
<i>Curculigo orchoides</i>	Curculigenin A and curculigol Curculigoside A Curculigoside,	antihepatotoxic properties reduced paw swelling Anti-osteoporosis	Bhukta <i>et al.</i> 2023 Khiem <i>et al.</i> 2024
<i>Eclipta alba</i>	Wedelolactones Demethylwedelolactone Coumarins	Antihepatotoxic Antimyotoxic, Antihaemorrhagic Antinociceptive, Anti-inflammatory, bronchodialator	Yadav <i>et al.</i> 2017
<i>Vernonia cinerea</i>	Flavonoids, Triterpenoids sesquiterpene lactones apigenin, sterols, alkaloids,	Antioxidant activity Anti-inflammatory activity Anti-cancer activity	K. Jiny Varghese <i>et al.</i> 2010 Trang <i>et al.</i> 2024
<i>Biophytum sensitivum</i>	Flavonoids, Caffeic acid Phenolic Compounds Terpenoids Amentoflavone Isoorientin	Antioxidant, anti-inflammatory, Anticancer Antimicrobial, Antidiabetic, Hepatoprotective Antibacterial, Antitumor, Radioprotective, Chemoprotective	K. Jiny Varghese <i>et al.</i> 2010 Richard JJ <i>et al.</i> 2024
<i>Cardiospermum halicacabum</i>	Flavonoids, Steroids Cardiospermin Rutin and luteolin	Antioxidant, Anti-inflammatory, Anticancer	Elangovan <i>et al.</i> 2022 Mruthunjaya <i>et al.</i> 2023

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