



Review Article

A CRITICAL REVIEW OF VANADHANYAKA (*Eryngium foetidum* Linn.)

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ABSTRACT

Over the centuries, classical Ayurvedic texts have documented a vast array of medicinal plants, categorizing them based on *Rasa*, *Guna*, *Veerya*, *Vipaka*, and *Prabhava*. However, several plants traditionally known to indigenous communities remain inadequately described in classical treatises. One such plant is *Vanadhanyaka* (*Eryngium foetidum*), native to Mexico and South America and now cultivated worldwide, particularly as a spice plant. It is an annual or perennial herb with a characteristic fragrance similar to *Dhanyaka* (*Coriandrum sativum*). *Eryngium foetidum* is reported to be rich in calcium, iron, carotene and riboflavin. Leaves are an excellent source of vitamin A, B2, B1 and C. Phytochemical analyses of the leaves have revealed the presence of flavonoids, polyphenolic compounds, saponins, phytosteroids, triterpenoids, alkaloids, tannins, anthraquinones, cardiac glycosides, and terpenes. The major constituent of its essential oil is eryngial (E-2-dodecenal). Its reported pharmacological actions include antibacterial, anthelmintic, antioxidant, analgesic, and antipyretic activities. Although scarcely mentioned in Ayurvedic literature, ethnobotanical surveys and regional traditional practices indicate that *Vanadhanyaka* possesses notable therapeutic potential. It is traditionally used in conditions such as burns, ear ache, fever, hypertension, constipation, asthma, worms, infertility, snake bites, abdominal pain, malaria and diarrhea. This study seeks to bridge the gap between traditional Ayurvedic knowledge and contemporary scientific understanding by exploring *Vanadhanyaka* with respect to its botanical identification, vernacular nomenclature, regional usage, phytochemical composition, therapeutic applications, and methods of cultivation and propagation.

INTRODUCTION

Ayurveda, the ancient science of life, its primary aim is to maintain the health of the healthy and to cure disease in the afflicted individual. Among the vast number of medicinal plants described in Ayurvedic literature, many are well-documented in classical texts; however, the reference to *Vanadhanyaka* is not found in the *Samhita* period. It is only in the later *Nighantu* period that *Adarsha Nighantu* mentions this herb, which has been botanically identified as *Eryngium foetidum* Linn., belonging to the family *Apiaceae*^[1].

AIM AND OBJECTIVE

Review of classical and recent literatures regarding the drug.

Chronological Order

In *Veda kala* and *Samhita Kala*

There is no direct mention of *Vanadhanyaka* in the Vedic literature or in classical Ayurvedic *Samhitas* (*Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*).

In *Nighantu kala*

The earliest reference to this plant appears in the *Adarsha Nighantu*^[1]

In *Adhunik kala*

Modern works that mention and describe *E. Foetidum* include:

- Flora of South Kanara by Gopalakrishna Bhat^[2]
- Karnatakada Oushadiya Sasyagalu by Dr. Magadi R. Gurudev^[3]

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- Indian Medicinal Plants by C.P. Khare^[4]
- The Wealth of India (CSIR)^[5]
- Indian Medicinal Plants by Kirtikar & Basu^[6]

Vernacular names

Table 1: Vernacular names ^[2,3,4,7,]

English	Sea Holly
Hindi	Ban dhaniya
Kannada	Kadukottambari (It has the smell similar to the Kottambari)
French	Chardon étoile fétide
German	Langer Koriander, Mexikanischer Koriander
Bengali	Bon dhonia
Indonesian	Walangan
Manipuri	Awa phadigom
Vietnamese	Ngò gai
Assamese	Jongali memedo, Ori
Malayalam	Afrikan koriyandar, Afrikan malli
Spanish	Culantro, Racao
Brazil	Coentro do Pará
Bengali	Bilati dhonia means foreign coriander
Nagaland - Burma	Dhania

It is also called has long coriander, wild or Mexican coriander, spirit weed, stinkweed, duck-tongue herb, saw tooth or saw-leaf herb, and saw tooth coriander.

Taxonomical Position

Table 2: Taxonomical Position ^[14]

Kingdom	Plantae
Unranked	Angiosperms
Unranked	Eudicots
Unranked	Asterids
Order	Apiales
Family	Apiaceae
Genus	Eryngium
Species	E.foetidum

Greek and Roman people know about this plant since B.C. Materia medica was written by Greek Vaidya in 1st Century, he has written 600 plants, it is also one among those plants. In Greek it is called as *Eryngium*. This is only used as genus name and it smells strong like *Dhanyaka* so called as *foetid* by Linnaeus.^[14]

The name culantro sometimes causes confusion with *Coriandrum sativum*, the leaves of which are known as

cilantro and of which culantro is said to taste like a stronger version.^[14]

Morphology

^[2,3]

- Habit: Tropical, aromatic, perennial or annual herb (8–40 cm tall), arising from a basal rosette.
- Root: Taproot, fusiform, with fibrous rootlets.
- Stem: Erect, furrowed, solitary, dichasially branched.
- Leaves: Basal: Numerous, lanceolate/oblanceolate, entire, 5–25 × 1.2–4 cm, margins spinulose-serrate. Upper: Sessile, opposite, deeply serrate.
- Inflorescence: Trifurcate, forming monochasial branches; heads cylindrical, 5–12 × 3–5 mm.
- Flowers: White/pale yellow petals; styles erect, longer than calyx.
- Fruit: Ovoid-globose, tuberculate (1.1–1.3 mm).
- Season: Flowers and fruits from April–June.

Distribution

- In India: Assam (native), Tamil Nadu, Kerala, Karnataka (South Kanara, Kodagu). Grows at 4000–5000 ft above sea level^[3].
- Assam upto 1,700m found as a garden plant in Deharadun^[4]
- The herb is indigenous to tropical America, tropical Africa and Caribbean islands, and was introduced around the 1880s by Chinese to the large parts of South-East Asia (Indochina, Malaysia, Indonesia).^[8]

Chemical constituents

The main constituent of essential oil of the plant is eryngial (E-2-dodecenal) ^[14].

- Leaves: Phytochemical screening of the leaves indicated the presence of flavonoids, polyphenolic compounds, saponin, Phytosteroids, triterpenoids, alkaloids, tannins anthraquinones, cardiac glycosides and terpenes^[5,8,10,11].
- Essential oil from leaves by hydrodistillation method, showed 63 compounds which have been identified as aliphatic aldehydes, most of which are α , β unsaturated. A hexane extract of the leaves enriched with stigmasterol.
- Seeds: Contain sesquiterpenoids (carotol, β -farnesene), phenylpropanoids (anethole), and monoterpenes (α -pinene)^[8].
- Roots: Essential oil dominated by aromatic aldehydes (2,3,6-trimethylbenzaldehyde 40%)^[5,8].

Uses

- In stomach ache due to indigestion - 1\2 spoon of root paste is given internally.
- *Unmada - Patra churna* – 1p
Neerubhrami plant *churna* – 1p
Mixed and taken with honey BD for 6 months.

- Swelling due to injury- Lukewarm leaves are tied over the injured area^[3].
- Flu, pneumonia, diabetes, and constipation- Leaves and roots decoction given orally.
- The crushed leaves are placed in the ear to treat pain, and are used for the local treatment of arthritic processes^[8].

Herb is used traditionally for treatment of fever, vomiting, diarrhoea, cold, cough, arthritis, hypertension, female reproductive disorders, scorpion stings, ear pain, burns, constipation, asthma, worms, snake bites, malarial fever, chills, headache, epilepsy and stomach pains, it is also used as a laxative and purgative^[8].

As food

It is used similar to *Dhanyaka*. In Assam it is cooked with rice for the fragrance, in absence of coriander^[3].

Wild coriander is most popular for culinary purpose in Caribbean and Asia, particularly in Malaysia, India, Korea, Thailand and Singapore, where it is harvested leaves are commonly used. In Latin America, recipes are enhanced with Culantro. Its food applications also include as a seasoning material for the culinary purposes. The herb by having a different spicy aroma gives a unique characteristic flavor to the dishes and due to this, increasing demand for the herb among ethnic populations^[8].

Nutritional value

Culantro is reported to be rich in calcium, iron, carotene and riboflavin. Fresh leaves are 86–88% moisture, 3.3% protein, 0.6% fat, 6.5% carbohydrate, 0.06% phosphorus, and 0.02% iron. Leaves are an excellent source of vitamin A (10,460 I.U./100g), B2 (60mg%), B1 (0.8mg%), and C (150–200mg%)^[8].

Sensory quality

Aroma strong, very similar to fresh coriander leaves; taste similar, but even stronger^[15].

Pharmacological actions^[1,4,8,13]

- Anti-convulsant, anthelmintic, topical anti-inflammatory, analgesic, antimalarial antibacterial, anticlastogenic, galactagogue, diuretic, stomachic, cardiovascular and diuretic. The plant is CVS and CNS active and hypothermic^[13].
- Coumarins, saponins, flavonoids, plant acids and polyphenolic acids, saponins are haemolytic.
- The root possesses, stomachic, diuretic and anti-inflammatory properties and is used for urinary tract infections (cystitis, polyurea, renal colic).
- Pharmacological studies of the aerial plant parts have demonstrated anthelmintic activity due to eryngial, anti-inflammatory action due to the phytosterol fractions.

- Eryngial showed significant levels of efficacy in curing infections caused by parasites such as trypanosomes, nematodes, worms, bacteria and fungi.

LD50

The LD50 value for *Eryngium foetidum* Linn. Leaves extract is 1649.24mg/kg^[9].

Cultivation and propagation^[9,16]

- Climate: Frost-sensitive; grown as an annual in temperate regions.
- Propagation: By seed; slow germination (up to 3 weeks, even with bottom heat). Transplanting recommended.
- Spacing: 4–6 inches within rows; ≥6 inches between rows.
- Soil: Moist, well-drained sandy loam, rich in organic matter; pH 6.1–7.8.
- Water: Requires consistently moist soil.
- Light: Light shade preferred- improves leaf size, colour, aroma; full sun induces early flowering.
- Photoperiod: Sensitive to day length; long days accelerate flowering and reduce leaf yield.

Harvest

- Cut outer leaves individually or the whole rosette at soil level.
- Prune flower stalks to prolong vegetative growth.
- Harvest before flowering for best flavor.

Storage

- Fresh leaves wilt quickly; market soon after harvest.
- Storage life: up to 2 weeks at 10°C; 4 days at 28°C.
- Leaves can be preserved by chopping with olive oil and freezing.

Seeds

- Collect by bagging seed heads or drying pods on plants.

Pests & Diseases

- Generally, pest-free; occasional leaf spots (*Cladosporium oxysporum*).
- Ants may damage seeds.

Propagation Challenges

- Low germination and seed viability hinder large-scale cultivation.
- Tissue culture suggested for mass propagation and conservation.

Parts used

Root, leaves, buds, seeds^[1,3,16]

Substitute

The plant is used as a substitute for coriander for flavouring rice and curries^[5].

Commercial uses [5,10]

- *E. Foetidum* is used as a condiment for culinary purposes.
- Widely used in perfumery and cosmetic industry. Both hydrocarbons and oxygenated compounds are responsible for the characteristic odours and flavours.
- The aldehydes such as decanal and dodecanal are very significant constituents of the volatile oil of *E. Foetidum*, due to its vital application in flavour and fragrance industry.
- *Eryngium foetidum* Linn. Has essential oil which contained about 40 compounds, and has high economic value in international and domestic markets.
- The plant has been used as cattle fodder in java.

Previous work done

- Dr. Pranjalip. P. Clinical evaluation of kumari with special reference to *Youvanapidika*. Gujarat Ayurveda University. Jamnagar 2000.
- Dr. Naveen B.S. Comparative study on *Vanadhanyaka lepa* with and without *Prachhanna* in the management of Indraluptha. Rajiv Gandhi University of the health sciences 2009.

DISCUSSION

The present review highlights that *Eryngium foetidum* Linn. (*Vanadhanyaka*) is not mentioned in the Vedic or Samhita period, suggesting its relatively late recognition within the Ayurvedic pharmacopeia. Its citation in *Adarsha Nighantu* marks its introduction into traditional literature, while extensive documentation in modern pharmacognostic sources reflects its growing contemporary relevance. The phytochemical profile, dominated by eryngial and other aliphatic aldehydes, provides a scientific basis for its reported antimicrobial, anti-inflammatory, anthelmintic, and antimalarial properties. These findings are consistent with its traditional applications in gastrointestinal, respiratory, and infectious disorders, indicating a strong alignment between ethnomedicinal use and pharmacological validation.

Beyond therapeutic potential, *E. Foetidum* holds considerable nutritional and culinary value, being rich in vitamins and minerals and widely employed as a coriander substitute in diverse cuisines. This dual role as a spice and medicinal herb enhances its acceptability and potential for functional food applications. Nevertheless, limitations in large-scale propagation due to low seed viability remain a significant challenge, underscoring the need for biotechnological approaches such as tissue culture.

While preclinical studies support multiple pharmacological activities, systematic clinical evaluations remain scarce. Establishing standardized extracts, dosage regimens, and safety profiles is

essential to translate its traditional and experimental potential into evidence-based therapeutic use. Thus, *E. Foetidum* emerges as a promising plant at the interface of food, medicine, and industry, warranting further interdisciplinary research for its integration into modern healthcare systems.

CONCLUSION

Eryngium foetidum Linn. represents a unique medicinal and culinary herb with significant ethnomedicinal relevance and growing scientific validation. Its diverse phytochemical profile, particularly rich in aliphatic aldehydes, underpins a broad spectrum of pharmacological activities that correlate with traditional claims. Despite its potential, gaps remain in large-scale cultivation strategies and clinical validation. Future research focusing on standardized formulations, propagation techniques, and controlled clinical studies will be crucial to fully establish its therapeutic and commercial value.

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