



## **Study on *Sebastiania Chamaelea* (L.)Muell. Arg - A Rare Herbal Drug**

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### **ABSTRACT**

*The plant Sebastiania chamaelea (L.)Muell.arg belongs to Euphorbiaceae family colloquially known as 'Bhumi Eranda' which is widely known and used by the folklore community and traditional healers in the management of pain. This plant is native to Africa, southern Asia and Australia. The use of this folk medicine is popular in pain management in various parts of world. Conventional use of this drug is very limited. A handful number of studies have been conducted on the drug Sebastiania chamaelea (L.)Muell.arg. The studies support and demonstrate way for further evaluation of Sebastiania chamaelea (L.) Muell arg as a herbal medicine in the treatment of diseases. This present study was conducted to establish a detailed review on the drug from classical and contemporary literature.*

**Keywords:** *Sebastiania chamaelea (L.)Muell.arg, Euphorbiaceae, Bhumi Eranda.*

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### **INTRODUCTION**

To select ,organize and systematically evaluate the plant product based on its multiple therapeutic usage in traditional systems of medicine is foundation and basis for development of new drugs from plants . One such plant is *Sebastiania chamaelea (L.)Muell.arg*. The nomenclature of the drug states it as भूमि एरण्ड however it is a coined term. भूमि - 'भवन्ति भूतान्यस्यामिमत्' [1] Bhoomi is where the objects will get birth, grow or die. एरण्ड वायुं । आ + ईर गतौ कम्पने [1] Eranda is the one which moves or shakes the vayu. The one which pulls down the vayu. The plant is botanically identified as *Sebastiania chamaelea (L.)Muell.arg*. *Sebastiania* [2] - A genus of apetalous plants of the order Euphorbiaceae. The sebastina are bushes, several tropical shrubs, including a mexican jumping bean. Mexican jumping bean are a type of seed of a shrub of the genus *Sebastiania* in which alarva has hatched from an egg laid there by a moth, the movement of the larva causing the seed to move around. *Chamaelea* [3] - 'Chamae' means dwarf. 'Lea' means a tract of open ground, especially grassland; meadow, also known as *Microstachys chamaelea (L.)Muell.Arg*. 'Microstachys' derived - from a Greek word 'mikros' meaning small, tiny. 'Stachys' spike referring to male flowers.

### **VERNACULAR NAMES: [4]**

TABLE No: 1 Vernacular Names

Language	Names
Sanskrit	Bhumieranda
Hindi	Bhooyi aerandee
English	Creeping Sebastiania, Sanke's tongue
Kannada	Bhoomiaerendi, Nelaharalu
Malayalam	Njettavanakku, Odiyavanakku, Kodiavanakku
Tamil	Eliamanakku, Pullamanakku, Kuruvikacceti
Marathi	Bhui-erandi
Konkani	Bhooyiarandi
Malay Peninsula	Ambin-ambin
Borneo	Daun merayat

### **BOTANICAL DESCRIPTION:**

Morphological features of Euphorbiaceae:

Trees, shrubs or herbs often with milky juice. Leaves alternate or opposite, rarely divided or compound; stipules usually small, caducous or persistent, rarely connate in a bud-protecting sheath; glands

sometimes at the apex of petiole or at the base of the leaf blade. Flowers usually small or minute, always unisexual; inflorescence various, usually compound, sometimes (Euphorbia) of single naked 1-staminate florets in a perianth-like involucre surrounding a solitary pistil, more commonly the main inflorescence centripetal, axillary or racemose, the sub-divisions cymose, sometimes wholly cymose in terminal dichotomous panicles, or reduced simple clusters or solitary florets. Perianth often small, sometimes obsolete, often dissimilar in the 2 sexes, usually simple, calycine with valvate or imbricate segments, sometimes calycine and 2-seriate imbricate, with segments all similar or occasionally dissimilar, rarely double, the inner then of 4-5 small scale like, or very rarely conspicuous petals. Male flowers: torus sometimes forming an intra-staminal disk or with disk-glands or disk-lobes alternate with stamens of the outer series. Stamens various, sometimes solitary or fewer than, sometimes as many as sepals or petals, sometimes indefinite (rarely very numerous); filaments free or connate; anthers 2-celled, often didymous with longitudinal, transverse or porous dehiscence. Rudimentary ovary present or 0. Female flowers: sepals usually larger and less connate than in the male. Petals sometimes smaller and less often present than in the male. Disk hypogynous or of discrete glands or 0. Ovary superior, sessile or stipitate, usually of 3 (rarely more or 2) carpels more or less united; ovules 1-2 in each carpel, pendulous from the inner angle of the cell, the funicle often thickened; styles as many as the carpels, free or united or entire or divided; stigmatic surface usually on the inner face of the styles or style-arms [5].

Fruit usually a capsule of three 2-valved 1-2 seeded cocci separating from a persistent axis, or drupe with 1-3 cells or of one or more combined nuts. Seeds laterally attached at or above middle of the cells, with or without an aril or caruncle at the hilum; albumen fleshy; embryo straight, enclosed in the albumen; cotyledons flat, leafy and radicle superior; rarely albumen 0 and cotyledons fleshy.

**Morphological features of *Sebastiania chamaelea* (L.) Muell. arg [6-22]**

**Habit:** *Sebastiania chamaelea* (L.) Muell. arg is an erect to sprawling annual to perennial glabrous herb or many stemmed shrub with slender stem, growing from a yellowish-brown taproot around 15cm long. It usually grows up to 50cm tall, occasionally to 100cm.

**Roots:** Strong, long thin tap root, yellowish brown, with a smooth surface, about 15cm in length without odour and taste.

**Stem:** Stem green to brown, at maturity it appears brown, smooth surface with longitudinal ribs and no odour and bitter taste. Usually many from the root, ascending 1-2ft, slender, grooved, ribbed, or terete, dichotomously branched.

**Leaves:** Small, regularly alternate; symmetric. The ventral side is dark green and dorsal light green. The margin of leaves is very dense with glandular brown colored teeth, almost touching apex. Distant 1/2-3in, by 1/4-1/2in, sessile, petiole short (less than 1 cm long; absent to long in some Neotropical species), glandless; blade elliptic, ovate or linear, finely serrulate, base tapering, mid-nerve strong, 0.3-2 cm wide, base acute to sub-cordate, margin with very dense, minute and persistent glandular teeth, 0.3-0.6mm apart and often nearly touching each other (rarely fused into an entire, glandulous margin), apex rounded, acute or mucronate, above glandless and glabrous, lower surface paler and smooth to papillate but never white, glabrous to pilose, at base often with few marginal to sub-marginal glands, basal ones slightly larger, secondary veins arching and usually looped but often hardly visible, tertiary veins not visible but presumably reticulate.

**Inflorescence:** Flowers are yellowish, simple, without sterile basal region, monoecious terminal and axillary, often opposite to leaves. Appears in 5-12 mm long spikes, laterally or at the end of branches. Male flowers are numerous, spirally arranged at upper part of inflorescence axis, female ones 1 or several inserted at lower part of inflorescence axis. Disk 0. Male flower calyx minute, membranous, unequally 5-lobed or partite. Stamens 2-4; filaments short free or nearly so; anther cell distinct contiguous, distinct, parallel. Pistilloid 0. Female flower calyx 3 lobed or partite, longer than male, obovate, acute, lacerate and ciliate. Ovary exerted 3-celled; styles free or connate at the base, entire revolute or spreading; cells 1-ovuled, capsule 6-8 mm, long, globose of 3 cocci separating from a columella, endocarp crustaceous.

**Fruits:** Fruits glabrous, smooth except for the two dorsal rows of spinules, thinly crustaceous, with short (0-2 mm long) pedicel; 3-seeded, sub-globosely oblong with very regular shape, usually with 6 rows of spine-like excrescences, dry, dehiscing regularly along the septa, glabrous to hirsute; mericarps with a thin exocarp (fruit length/pericarp thickness > 10/1), septa very regular, with a small separate basal triangle and 1 furcate vascular strand; remaining central columella very regular, slightly alate with parallel margins over its whole length.

**Seeds:** Carunculate, oblong or subglobose, rounded at both ends, strophiolate, mottled. Endosperm fleshy; testa smooth, cotyledons broad, flat.

**Distribution [23]:**

*Microstachys chamaelea* occurs from Ghana east to the Central African Republic. Widely distributed throughout the old world tropics and subtropics from West Africa to New Guinea and Australia.

**Distribution in India:** A weed in cultivated land, fallow fields, on thin layers of soil on rocky places and often as forest undergrowth, roadsides, grasslands, from sandy beaches to hills, up to 1200m altitude. Kerala, Tamil Nadu, Karnataka, Goa, Andra Pradesh, Maharashtra, Gujarat, Madhya Pradesh, Chhattisgarh, Orissa, Uttar Pradesh, Jharkhand, West Bengal and Andaman Islands.

**CHEMICAL CONSTITUENTS:**

Alkaloids, Flavonoids, Phenols, Steroids, Tannins, Glycosides, Terpenoids, Saponins, lignins. Qualitative analysis of leaf reported few phenolic acids such as caffeic acid, melilotic acid, aesculetin, p-hydroxybenzoic acid, coumarin, cinnamic acid, salicylic acid and scopoletin along with five Flavonoids like myricetin, quercetin, kaempferol, luteolin and apigenin.

Medicinal properties and uses:

- Bhumieranda swarasa added with coconut milk, guda and jeeraka churna is given Vayukshoba chikitsa [25].
- Palandu, hingu, punarnava moola, haritaki, eranda moola, amra patra, Kodiavanakku and Krishna jeeraka is made Kashaya and given in antrashoola [25].
- The whole plant of creeping sebastiania is used for vata, pitta, diarrhea, dysentery, hemorrhage, hemorrhoids, menorrhagia, leucorrhoea and skin Diseases [4].
- Leaf decoction of *Sebastiania* in ghritha is considered to be tonic, and is applied to the head in vertigo.[5]
- Juice of the plant is reportedly used as a remedy for syphilis and diarrhea and mixed with wine as an astringent.[26]

Folklore practice of *sebastiania*:

- Ethno-medicinal practices by the tribal groups uses the drug to heal headache.[27]
- A decoction of the leafy stems is used as a bath to relieve teething pain in babies.[4]
- When cooked together with meat and vegetables, whole young plants are used for giving a speedy recovery to women after giving birth.[4]
- Ethno-botanical data obtained from Nigerian and Senegalese traditional healers, states *Sebastiania* is traditionally used to treat malaria.[28]
- Traditional healers from Kerala, uses the drug in combination with Vatahara dravyas in treatment of pain management.

Therapeutic potential of *Sebastiania chamaelea* (L.) Muell. arg:

**Anthelmintic activity:** The aqueous, methanol, ethanol and chloroform leaf extracts of *Sebastiania chamaelea* have been found to possess anthelmintic activity against *Pheretima posthuma*. This study was conducted in four different dose standards. In its preliminary phase revealed the presence of, glycosides, steroids, tannins, flavonoids in higher quantities and phenols, and terpenoids. [29]

**Anti-diarrhoeal activity**<sup>30</sup> : An experimental study on the antidiarrhoeal activity of leaf extracts was conducted and it was observed to inhibit fecal defecation with methanol extracts and inhibition of intestinal fluid content on castor oil induced rats compared with atropine. The study concluded antidiarrhoeal activity to that of *Securinega virosa* at low concentrations with 90% of inhibitory activities.

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