REVIEW ARTICLE

Ethnomedicinal, Phytochemical, and Therapeutic applications of *Evolvulus alsinoides* Linn. – A Review

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ABSTRACT

*Evolvulus alsinoides* is an important medicinal plant used for different ailments in India traditionally. It grows in open and grassy places throughout almost all of India and subtropical countries of the world. The oldest documentation of its use is from India and surrounding regions. The herb was used to treat dysentery. It is used as a brain-tonic in traditional systems of medicine like Ayurveda and Unani. The plant is used by certain ethnic races across India, Africa and Philippines to cure fever, cough and cold, venereal diseases, azoospermia, adenitis, and depression. The entire plant was considered astringent and useful for treating haemorrhages, and there are a variety of other medical applications. This review paper briefly discusses the botany, ethnomedicinal, phytochemical and therapeutic applications of *Evolvulus alsinoides* Linn. with an attempt to compile the document and highlight the need of research and development.

Key Words: *Evolvulus alsinoides* Linn., Vishnukrantha, Ayurveda, Botany, Ethnomedicinal uses, Pharmacognosy
INTRODUCTION

Ayurveda is the oldest medical science in the world and has been practiced since 12th century BC. Its objective is to accomplish physical, mental, social and spiritual well-being by adopting preventive, health promoting and holistic approach towards life. Drugs acting on the central nervous system (CNS) are among the first to be discovered by the primitive human and are still the most widely used group of pharmacological agents. The CNS acting drugs are invaluable therapeutically, because they can produce specific physiological and psychological effects. From the vast array of materia medica of the indigenous system, many plants have been reported to have activity against CNS disorders and thus act as very useful remedies for the alleviation of human suffering. With the advent of newer techniques for chemical characterization and pharmacological investigations, plant-based drugs are receiving much attention. From the earliest times herbs have been prized for their pain relieving and healing abilities and today we still rely largely on the curative properties of plants. Over centuries societies around the world developed their own tradition to make sense of medicinal plants and their uses. One such plant which claims various medicinal properties is *Evolvulus alsinoides* one of the popular and important medicinal plant in India. All parts of *Evolvulus alsinoides* possess valuable medicinal properties. This plant is widely used in ayurveda. In Ayurvedic literature *Evolvulus alsinoides* is known as Vishnukrantha, which has been told to have ‘Medhya’ ‘Smritivardhaka’ and ‘Buddhivardhaka’ (Memory enhancer) action and is categorized in the ‘Samjnasthapana dravyas’.

HISTORICAL REVIEW

*Evolvulus* is an American genus, with its 100 or so species originally confined to the New World (van Ooststroom, 1934). *Evolvulus alsinoides* in the Old World was first thought to be an Alsine (Burman, 1737). Thus, the species was gathered in India perhaps 60–67 years before being recorded in the Americas. It was told in Sri Lanka that the blue of the *Evolvulus* flowers denoted its association with Vishnu (Austin, 1980). That notation alludes to the color of Lord Vishnu’s skin in Hinduism. The Puranas described Vishnu as being dark-blue. It has been said that “The color of his skin has to be new-cloud-like-blue: The blue color indicates his all-pervasive nature, blue being the color of the infinite sky as well as the infinite ocean on which he resides” (Wikipedia, 2007). However, it appears
clear that the current use of the word Vishnukranti resulted from the transfer of pre-European names to plants introduced from the New World. Since *Evolvulus alsinoides* and some other introductions manifest colors important in Hindu beliefs as being associated with deities, it is likely that this hastened their adoption (Daniel F. Austin, 2008).

**BOTANICAL DESCRIPTION**

Kingdom : Plantae  
Subkingdom : Viridaeplantae  
Infrakingdom : Streptophyta  
Division : Tracheophyta  
Subdivision : Spermatophytina  
Infradivision : Angiospermaea  
Class : Magnoliopsida  
Superorder : Asteranae  
Order : Solanales  
Family : Convolvulaceae  
Genus : Evolvulus L.  
Species : alsinoides (L.) L.  
Scientific name : *Evolvulus alsinoides*

**BOTANICAL DERIVATION**

*Evolvulus*: The genus name comes from the Latin word “evolvulus” meaning “to unroll” and is referring to the species non-vining habit (Missouri Botanical Garden Internal Notes, 2005).

*Alsinoide*: variously thought to be chickweed (Stellaria media or nemorum), a Cerastium, Parietaria cretica.

*Oides* - Like, resemble (Dictionary of Botanical Epithets).

*Alsine*: like the genus Alsine. A name used by Theophrastus & Dioscorides,
VERNACULAR NAMES

**English**: Slender dwarf morning-glory

**Hindi**: Vishnukranta, Shyamakranta.

**Kannada**: Vishnukranti, Shankha vaelu, Vishnugranthi soppu.

**Malayalam**: Vishnukranthi.

**Sanskrit**: Vishnukranta, Laghu vishnukrantha.

**Tamil**: Vishnukranthi, Vishnukarandi.

**Telugu**: Vishukraanthamu, Nalla Vishnukraantha. (Ramesh R, 2005; Magadi R Gurudeva, 2001)

HABITAT

*Evolvulus alsinoides* L. commonly found in India, Africa, and the Philippines, is an important medicinal plant employed for different ailments in India traditionally. It grows in open and grassy places throughout almost all of India and subtropical countries of the world. The oldest reports found of the use of *Evolvulus alsinoides* are from India and surrounding regions (Dhana Lekshmi U. M. & Neelakanta Reddy P, 2009).

Fig. No.: 1 *Evolvulus alsinoides*

1.1 Whole plant in habitat, 1.2 Stem with flower, 1.3 Flower

MORPHOLOGY

**Habit**: Diffuse, densely, hispid, perennial herb with a small woody branched root-stalk.

**Stem**: Stem not rooting at the nodes, numerous, often more than 30cm long, prostate, spreading, slender, wiry, usually clothed with long spreading hairs, but sometimes quite glabrous.
Leaf: Oblong-lanceolate, elliptic, apiculate, numerous, leaves upto 6-20 by 4-8mm, elliptic-oblong, obtuse, strongly apiculate, usually acute at the base, densely clothed with appressed silky hairs, sub-sessile to shortly petioled, sometimes almost 0, alternate 2 cm length and 1 cm breadth, silky pilose on both surface.

Inflorescence: Flowers light blue, solitary, or sometimes to form a pair of lanceolate bracts on the peduncle, peduncles very long, filiform, axillary, pedicels filiform.

Flowers: Calyx densely silky, calyx lobes 5, acuminate, 4mm long, lanceolate, very acute. Corolla 5mm long, 5 lobes are present, rotate, limp plicate and sub entire.

Androecium: Stamens 5, epipetalous; filaments filiform; anthers oblong, exerted, equal.

Gynoecium: Ovary bicarpellary tetralocular due to false septum formation, ovule 1 per each locule, axil, superior, 2-celled; ovules 4, styles 2 each cleft in to two linear branches ending in simple stigmas.

Fruit: Fruit a globose 4- valved capsule (Kirtikar K.R & Basu B.D, 2008; Madhava Chetty K, 2008).

VARIETIES
2 types of Vishnukrantha are mentioned in the Ayurvedic classics, one is blue flowered and the other white flowered. The blue flowered variety is taken as *Evolvulus alsinoides* (Sivarajan V.V. & Indira Balachandran, 2006).

PART USED
Leaf, stalk, roots, whole part (Kirtikar K.R & Basu B.D, 2008).

INDICATION

POSOLOGY
Juice - 20-30 ml
Powder - 3-6 gm
Phanta - 40-60ml (Chunekar K. C, 2010).

THERAPEUTIC USES
The whole herb is used medicinally in the form of decoction or infusion in doses of 2-4 ounces with cumin and milk, and used in fever, nervous debility and loss of memory also in syphilis, scrofula. In fevers attended with diarrhea or
indigestion a decoction of the drug with *Ocimum sanctum* is administered (Nadkarni K.M, 2009). The Mohamedan physician believes that this plant has the power to strengthen the brain and memory. It is used as a febrifuge with cumin and milk and also as an alternative and with oil to promote the growth of hair. The root is used by the Santals in intermittent fever of children. The leaves are made in to cigarettes and smoked in chronic bronchitis and asthma. (Kirtikar K.R & Basu B.D, 2008)

Single drug remedy- the whole plant is made in to a paste by grinding it with water; 100gms of this paste is consumed with warm water daily in the morning and evening for 1 month to strengthen consumption. 10 gms of the above paste is taken along with the cow’s milk for 1 month at bed time to treat nerves weakness (Ramesh R, 2005). Its flowers are reported to be good for uterine bleeding and roots for duodenal and gastric ulcers. Leaf juice in conjunctivitis, increase brain power, given in bowel complaints, promotes consumption, and useful in internal hemorrhages. Root in intermittent fever in children (Sivarajan V.V & Indira Balachandran, 2006).

### ETHNOMEDICINAL USE

1) In India decoction of roots, thrice a day, is consumed in Eastern Ghats of Andhra Pradesh, India for three days for curing cough and cold.

2) According to an ethno botanical survey conducted among Kani/Kanikaran ethnic groups in Southern Western Ghats of India, whole plant of *E. alsinoides* is used for the treatment of venereal diseases.

3) In Uttara Kannada district of Karnataka, *E. alsinoides* is used as spermopiotic.

4) The Valaiyan community of Piranmalai hills, Tamil nadu consumes leaf juice of *E. alsinoides* internally for three days for fever.

5) The most common maladies against which these plants are now considered as a remedy in Ayurveda and by nonprofessional villagers in India are various mental problems. Among these illnesses are Epilepsy, Insanity, Nervous debility, and loss of memory.

6) In Sri lanka, roots and stem extract of the plant are used to treat dysentery and depression.

7) Nigerians also treat asthma and bronchitis with the species, and people in Ghana use the herb in love potions and religious rites (Amritpal Singh, 2008).
FORMULATIONS

1) Mrithasanjivani
2) Aranyatulasimuladi kashayam (Sivarajan V.V. & Indira Balachandran, 2006).

CULTIVATION

It is easily grown in organically rich, consistently moist, well-drained soils in full sun to part shade. Performs well in sandy soils with good drainage. Plants may be difficult to find in commerce. No known serious insect or disease problems (Missouri Botanical Garden Internal Notes, 2005).

PHYTOCHEMISTRY

The plant contains alkaloids: betaine, shankhapushpine and evolvine. Fresh plant contains volatile oil. It also contains a yellow neutral fat, an organic acid and saline substances. An unidentified compound has been isolated. Scopoletin, scopolin, umbelliferone, 2-methyl-1,2,3,4-butanetetrol, ferulic acid esters with alcohols C14-C17 and palmitic, stearic, oleic, 8-methyldecanoic and heptadecanoic acids have been reported. 2,3,4-trihydroxy-3-methylbutyl 3-[3-hydroxy-4-(2,3,4-trihydroxy-2-methylbutoxy)-phenyl]-2-propenoate (1) and 1,3-di-O-caffeoyl quinic acid methyl ester, caffeic acid, 6-methoxy-7-O-β-glucopyranoside coumarin, 2-C-methyl erythritol, kaempferol-7-O-β-glucopyranoside, kaempferol-3-O-β-glucopyranoside and quecetine-3-O-β-glucopyranoside were reported from n-BuOH soluble fraction from the ethanol extract of *Evolvulus alsinoides*.

TOXICOLOGY

Moderate doses (200 mg/kg) of the alcoholic extract of *Evolvulus alsinoides* caused drowsiness, stupor and less mobility in albino mice; higher doses were neither toxic nor lethal. Laboratory studies revealed the herb as anti-catatonic and a CNS depressant with a median lethal dose (LD$_{50}$) of 450 mg/kg (Neeraj kumar et al, 2009).

CONCLUSION

An estimate of the World Health Organization (WHO) states that around 85%—90% of the world’s population consumes traditional herbal medicines. Use of herbal remedies is on the rise in developing and developed countries. This review paper describes the study of the plant *Evolvulus alsinoides* Linn. which is focused on the plant’s botanical, phytochemistry, and ethnomedicinal uses. The above data would be helpful in further
study of the plant parts, research and development in field of medicine and therapeutic uses.

REFERENCES


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Conflict of Interest statement

The authors report no conflict of interest.