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A comprehensive review on shankhpushpi a morning glory

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Abstract

Shankhpushpi is an indigenous and very significant herb that consider as a gift of nature in Ayurveda. It is a natural medicine which enhances the memory power. It rejuvenates the nervous functions. It is also a natural tonic for mental development of children. It is very bitter, pungent, alternative tonic, brightens intellect, useful in bronchitis, improve complexion, biliousness, epilepsy and teething troubles of infants etc. this review include all the aspects of shankhpushpi. Convolvulus pluricaulis is a prostrate, spreading, perennial, wild herb commonly found on sandy or rocky ground under xerophytic conditions in northern India. It is one of the most important Medhya Rasayana drugs in Ayurveda. Its use improves the balance and vitiation in Kapha-vata-pitta doshas and the herb is astringent and bitter. Herbalists believe that Shankhpushpi calms the nerves by regulating the body's production of the stress hormones, cortisol and adrenaline. This drug shows antidepressant, antidiabetic, cardiovascular, anxiolytic, antioxidant, neuroprotective, hypolipidemic activity. It also shows antimicrobial, insecticidal, antifungal, antibacterial and anthelmintic, anticonvulsant, antiulcer and anticatatonic activity.

Keywords: shankhpushpi, memory, nervous functions, cortisol, adrenaline etc.

1. Introduction

In this competitive era, every human being wants to achieve highest goal. It is being increasing necessity at the student level in schools and colleges, as the exam pattern of present system is fully depended on memorizing the subjects only. Good memory is always appreciated in routine life and social interactions. Shankhpushpi is a word of Sanskrit which means “the plant with flowers shaped like a conch”. The conch or Shankha is one Lord Shiva's sacred instruments often used in ritual worship. It is the combination of two words (shankh + pushpa), the appearance of the flower is like a ‘shankh’ (a marine shell) and ‘pushpa’ means flower. The botanical name of the drug is Convolvulus Pluricaulis Choisy belongs to family Convolvulaceae which is found in most of the regions. It is a small hairy, procumbent, diffuse herb and is often considered as morning glory. It is a perennial herb with prostrate branches with small elliptic to oblong, lanceolate, obtuse, mucronate leaves. It has white to light blue flowers mostly solitary in upper axils or sometimes in pairs, axillary joined at the middle near the peduncle where two small opposite lanceolate bracteoles are present, styles two distinct from the base each divides again once thus, producing four stylar branches.

The fresh plant gives pale yellow oil with a green tinge and a characteristic odour by the process of steam distillation. This plant grows on the waste land under xerophytic conditions in northern India during the month of September and October. Convolvulus is known from the margins and within the Sahara and Sind deserts, a distribution that called Saharo Sindian. It is regarded as tonic to improve memory and brain. The leaves of Shankhpushpi were traditionally used to treat chronic bronchitis and asthma; roots are used to cure childhood fever and oil extracted from plant stimulates the growth of hair. It is also one of the best herbs that are used for enhancing beauty and helps in nourishing all the layers of skin. The ethanolic extract of the plant reduces total serum cholesterol, triglycerides, phospholipids and nonesterified fatty acid. There is one study on the herb, which throws light on its anti-ulcer properties and its helpfulness in alleviating the symptoms of hyperthyroidism, by reducing the activeness of a liver enzyme.

Bio-energetics of Convolvulus Pluricaulis Choisy

Rasa	Katu, Kashaya
Guna	Guru, Sara, Snigdha, Pichchila
Virya	Ushna
Vipaka	Madhura
Dosha	Balances and alleviates all the three doshas viz Vata, Pitta and Kapha
Karma	Medhakrita, Svarakara, Grahahutadi doshaghna, Vashikaran Siddhi

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The scientific classification of *Convolvulus pluricaulis*

Botanical name	: <i>Convolvulus pluricaulis</i>
Kingdom	: Plantae
Sub kingdom	: Tracheobionta
Super division	: Spermatophyta
Division	: Magnoliophyta
Class	: Magnoliopsida
Order	: Solanales
Family	: Convolvulaceae
Genus	: <i>Convolvulus</i>
Species	: <i>pluricaulis</i>
Popular names	: Shankpushpi, Shankhini, Kambumalini, Shankpushpi, Sadaphuli
Parts used	: entire plant and juice
Habitat	: found in India and Burma

The vernacular name of *C. pluricaulis* in different languages

Languages	Name
Sanskrit	Sankhapuspi
Hindi	Shankpushpi, Aparajit
English	English speedwheel
Urdu	Sankhali
Punjabi	Shankpushpi
Bengali	Sankhapuspi
Gujarathi	Shankhawali
Kannada	Bilikanthisoppu
Malayalam	Krsna kranti, Vishnukranthi,
Marathi	Shankhabela
Oriya	Krishna-enkranti
Tamil	Sanghupushpam, kakkurattai
Telugu	Shankhapuspi
Tibetan	Shankpushpi

Description

The branches of this herb are spread on the ground level having more than 30 cm long. The leaves are elliptic in shape (2mm), are located at alternate positions with branches or flowers. The flowers are blue in color (5mm), the herb is commonly found in India, especially in the state of Bihar.

Macroscopic Characters Preliminary macroscopical characters of ethanolic extracts of *C. pluricaulis*

<i>C. pluricaulis</i>		Characters
Leaf structures	Dimension	Length = 1.12 cm; breadth = 0.1 cm
	Attachment	Leaf stalk absent
	Lamina	Thin
	Stipules	Exstipulated
	Leaf lamina shape	Linear
	Leaf margin	Entire
	Leaf apex	Acute
	Leaf base	Decurrent
	Leaf texture	Whole (brittle)
	Venation	Parallel
	Phyllotaxy	Alternate
Stem structure	Leaf surface	Hairy
	Length	Several prostrate stems (10-30 cm)
	Surface	Clothed with silky hairs
	Internodes	10-12 mm
	Taste	Tasteless

2. Microscopic Characters**Preliminary microscopical characters of ethanolic extracts of *C. pluricaulis***

<i>C. pluricaulis</i>		Characters
Stomata number	Upper surface	202-216-238
	Lower surface	188-223-251
Stomatal index	Vein islet number	7.5-8.0-9.0
	Upper surface	16.9-18.0-17.2
	Lower surface	14.8-16.3-17.2
Extractive value	Water soluble	18.21
	Alcohol soluble	16.14
Leaf structures	Outline in transverse section	Concave – convex
	Collenchymas	Present beneath upper epidermis
	Calcium oxalate	Plenty, along veins
	Lamina	Isobilateral
	Cuticle	Striated
	Trichomes	Present
	Stomata	Both anisocytic and paracytic types on either side
Stem structures	Outline in transverse section	Terete, wings absent
	Cuticle	Striated
	Trichomes covering	Present, conical, unicellular
	Glandular	Present, stalk unicellular, head multicellular
	Chlorenchyma	Present
	Collenchymas	Present
	Endodermis	Indistinct
	Pericyclic fibres	Present
	Phloem fibres	Present
	Pith	Cells pitted in older stem

Traditional Uses of *Convolvulus pluricaulis* in India

Herbs have been used for centuries in India for treatment of many disorders like anxiety, insomnia and to promote longevity and prevent diseases by providing strength and immunity. It improves strength, digestive power, complexion and voice and cures intestinal worms, dysuria, animal poisoning, dyspnea, cough, diabetes, and uterine disorder. It is helpful in epilepsy, insomnia, heart disease and hematemesis. The leaves and flowers possess hypotensive properties used for treating anxiety neurosis.

The tribals in Chhindwara, Madhya Pradesh, India describe it as an anthelmintic, good in dysentery, and a one herb which cures skin ailments and reduces high blood pressure. In Gonda Uttar Pradesh, India, the leaves are recommended for mental disturbance and depression.

The herb is non-toxic and its use does not bring into being any side effects. On the other hand, there is stimulating effect in strengthening of health and weight gain. According to Ayurvedic concept, Rasayana therapy simultaneously affects the body and mind and brings about psychic and physical improvement. This therapy prevents the effects ageing, develops intelligence and augments the body resistance against diseases.

It is one of the most important Medhya Rasayana drugs in Ayurveda. Its use improves the balance and vitiation in Kapha-vata-pitta doshas and the herb is astringent and bitter. Herbalists believe that Shankpushpi calms the nerves by regulating the body's production of the stress hormones, cortisol and adrenaline.

Actions according to Ayurveda

Medhya	Promotes intellectual capacity
Swarakarini	Improves voice
Grahabhootadi doshaghni	Useful in diseases of supernatural origin
Rasayani	Rejuvenates the body
Kantida	Enhances the aura of the body and gives it a healthy look
Majjadhatu rasayana	Rejuvenates the nervous tissue
Unmadaghna	Alleviates insanity and emotional instability
Vrishya	Aphrodisiac
Pachambala	Increases the strength of the digestive system
Chedana	Laxative
Nidrajnana	Promotes sleep

Uses of Convolvulus pluricaulis

1. The Convolvulus pluricaulis plant extract is well known for treating insanity and hematemesis.
2. Leaves of Convolvulus pluricaulis plant are used to treat bronchitis and asthma.
3. The plant root is herbal remedy to treat childhood fever.
4. Convolvulus pluricaulis plant extract avoids fluid retention in the body and supports digestion.
5. The ethanolic extract of Convolvulus pluricaulis herb reduces the levels of (NEFA) non esterified fatty-acid which is main cause of death due to cardiac arrest.
6. In Ayurveda Convolvulus pluricaulis plant is also used for treatment of epilepsy.

Phytoconstituents present in shankpushpi

The chemical constituents in Shankpushpi consist of carbohydrate-D-glucose, rhamnose, maltose, sucrose and starch. It also contains proteins, amino acids and the alkaloids-convolvine, convosamine, confoline, phyllabine, convolidine, convoline, convosine, subhirsine and convolidine along with fatty acid and wax constituents, hydrocarbons, aliphatic and sterol and certain other bio-chemicals which include scopoletin, glacial acetic acid, three coumarins, β -sitosterol, kaempferol, tropane alkaloids, linoleic acid, palmitic acid and straight chain hydrocarbon hexatriacontane, 20-oxodotriacontanol, tetratriacontanoic acid and 29-oxodotriacontanol. Alcoholic extract of plant yield Di-oh-

cinnamic acid, kaempferol and Betastosterolglucos steroid of microphyllid acid. Hydroxy Cinnamic acid, Octacosanol tetracosane along with glucose, sucrose also have been isolated from the plant.

Pharmacological activities

This drug shows antidepressant, antidiabetic, cardiovascular, anxiolytic, antioxidant, neuroprotective, hypolipidemic activity. It improves learning and memory which was clearly identified in simple memory tests such as pole-climbing apparatus, passive avoidance paradigm and active avoidance paradigm tests. The ethanolic extract of Convolvulus Pluricaulis and its ethyl acetate and aqueous fractions were evaluated for their memory enhancing properties. Experiments were done on rats with two different doses like 100 and 200 mg/kg and the drug significantly improved memory and learning in rats. It also shows antimicrobial, insecticidal, antifungal, antibacterial and anthelmintic, anticonvulsant, antiulcer and anticatonic activity.

The root extract of Convolvulus pluricaulis Choisy. (0.4 mg / kg.d) for 30 days administered to L-thyroxine induced hyperthyroid mice decreased serum concentration of T3 and hepatic 5-D activity. These results point out that the plant extract-induced inhibition in thyroid function is primarily mediated through T4 to T3 conversion.

The juice of the whole plant prevents excessive menstruation. The fine paste made by grinding the plant is helpful for the cure of abscesses.

Improving memory with Convolvulus pluricaulis

1. Take its powder 2-4 grams, adding it to honey or sugar for 6 months. Wrinkles would disappear from your face in the old age. Memory power and astuteness would be increased.
2. For Sharp memory take 3 to 6 grams Convolvulus pluricaulis powder and honey with milk.
3. Give 2 to 4 grams of Convolvulus pluricaulis powder with 1 gram of Sweet Flag (bach) powder to raise intelligence in children and to make them sharp.
4. Take 3 to 6 grams of Convolvulus pluricaulis powder with milk early in the morning to enhance the memory power. Fatigue would vanish if you are studying for long hours.

Reported changes in health and well being

Effect on	Much worse	Worse	No change	Better	Much better
Appetite	25%	0%	62.5%	0%	12.5%
Balance/Equilibrium	12.5%	25%	50%	0%	12.5%
Blood pressure	25%	12.5%	50%	0%	12.5%
Breathing	12.5%	12.5%	62.5%	0%	12.5%
Confidence	0%	25%	75%	0%	0%
Coordination/Motor skills	12.5%	25%	50%	0%	12.5%
Digestion	12.5%	37.5%	37.5%	0%	12.5%
Emotional well being	25%	12.5%	62.5%	0%	0%
Energy	25%	25%	37.5%	0%	12.5%
Eyesight	12.5%	25%	50%	0%	12.5%
Memory	12.5%	25%	62.5%	0%	0%
Mental clarity	0%	25%	75%	0%	0%
Pain	12.5%	25%	50%	0%	12.5%
Patience	12.5%	37.5%	50%	0%	0%
Sexual health	12.5%	25%	50%	0%	12.5%
Skin complexion	12.5%	25%	37.5%	12.5%	12.5%
Sleep	25%	25%	37.5%	0%	12.5%
Stress level	25%	25%	50%	0%	0%

Commonly reported Shankhpushpi Side effects

Effect on	None	Mild	Moderate	Strong	Severe
Allergic reaction	80%	0%	0%	20%	0%
Anxiety	80%	0%	0%	20%	0%
Appetite loss	75%	0%	0%	25%	0%
Blurred vision	80%	0%	0%	20%	0%
Breathing difficulties	60%	20%	0%	0%	20%
Change in sex drive	75%	0%	0%	25%	0%
Change in weight	75%	0%	0%	25%	0%
Cold symptoms	80%	0%	0%	20%	0%
Confusion	80%	0%	0%	0%	20%
Depression	83.3%	0%	0%	16.7%	0%
Diarrhea	80%	0%	0%	20%	0%
Dizziness	83.3%	0%	0%	16.7%	0%
Drowsiness	80%	0%	0%	20%	0%
Dry mouth	75%	0%	0%	25%	0%
Fatigue	83.3%	0%	0%	16.7%	0%
Fever	80%	0%	0%	0%	20%
Gas	80%	0%	0%	20%	0%
Headache	83.3%	0%	0%	16.7%	0%
Insomnia	83.3%	0%	0%	0%	16.7%
Irregular heartbeat	80%	0%	0%	0%	20%
Mood swings	80%	0%	0%	0%	20%
Muscle cramping	80%	0%	0%	0%	20%
Nausea	80%	0%	0%	20%	0%
Nervousness	75%	0%	0%	25%	0%
Sensitivity to light	80%	0%	0%	0%	20%
Sexual dysfunction	80%	0%	0%	0%	20%
Stomach ache	80%	0%	0%	0%	20%

Current Ayurvedic formulations

There are many medicines currently available in India mixing numerous plant extracts or powders with two or three medhya plants including *Convolvulus pluricaulis*. These formulations are complex preparations of compound medicines and involve a number of processes. Some preparations have been subjected to clinical trials. Examples include:

Remem (Zyudus Industries, India): syrup, tablets. 10 species: *Centella asiatica*, *Celastrus paniculatus*, *Convolvulus pluricaulis*, *Asparagus racemosus*, *Acorus calamus*, *Embelia ribes*, *Tinospora cordifolia*, *Achyranthes aspera*, *Terminalia chebula*, *Saussurea lappa*.

Tirukati: 13 species: *Bacopa monnieri*, *Convolvulus pluricaulis*, *Centella asiatica*, *Asparagus racemosus*, *Valeriana wallichii*, *Rueraria tuberosa*, *Saussurea lappa*, *Embelia ribes*, *Tinospora cordifolia*, *Operculina turpethum*, *Pavonia odorata*, *Caryophyllus aromaticus*, *Foeniculum vulgare*.

Ayumemo (Welexlabs, India): 5 species: *Centella asiatica*, *Convolvulus pluricaulis*, *Celastrus paniculatus*, *Withania somnifera*, *Asparagus racemosus*.

Abana (The Himalaya Drug and Co, India): syrup, tablets. 19 species: *Centella asiatica*, *Convolvulus pluricaulis*, *Celastrus paniculatus*, *Balsamodendron mukul*, *Ocimum sanctum*, *Nardostachys jatamansi*, *Piper longum*, *Carum copticum*, *Zingiber officinalis*, *Cyperus rotundus*, *Acorus calamus*, *Embelia ribes*, *Syzygium aromaticum*, *Santalum album*, *Elettaria cardamomum*, *Foeniculum vulgare*, *Rosa damascena*, *Cinnamomum cassia*, *Crocus sativus*.

Tejras (Sandu Brothers, India): syrup. 12 species: *Centella asiatica*, *Convolvulus pluricaulis*, *Celastrus paniculatus*, *Eclipta alba*, *Cynodon dactylon*, *Asparagus racemosus*, *Withania somnifera*, *Nardostachys jatamansi*, *Acorus calamus*, *Zingiber officinalis*, *Vetiveria zizanioides*.

Shankhpushpi (Unjha Pharmacy, India): syrup. 6 species: *Convolvulus pluricaulis*, *Centella asiatica*, *Nardostachys jatamansi*, *Nepeta hindostana*, *Nepeta elliptica*, *Onosma bracteatum*.

3. Conclusion

Shankhpushpi is considered as Madhya (brain tonic) rasayana in Ayurvedas. It is a well-known medicinal herb and is believed to enhance certain aspects related to intellect and memory improvement. It is perennial herb that seems like morning glory. It also contains active constituents mainly in the form of proteins, amino acids and the alkaloids-convolvine, convolamine, confoline, phyllabine, convolidine along hydrocarbons, aliphatic and sterol and certain other biochemicals. There is still lack of clinical data for its effectiveness and clinical trials are necessary to justify its traditional use. The herb induces a feeling of calm and peace, good sleep and a relief in anxiety, stresses and mental fatigue. The herb modulates the neuro chemistry of the brain to produce its action. In future the standardization and stabilization studies on *Convolvulus pluricaulis* leaves extract can be carried out which can help in proving it to be a promising source in pharmaceutical, medicinal as well as nutraceutical industry. It is a nontoxic herb and its use does not produce any side effects.

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