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## **REVIEW OF SANKHAHAULI (*CONVOLVULUS PLURICAULIS* CHOISY) FROM TRADITIONAL MEDICINE TO MODERN SCIENCE**

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### **ABSTRACT**

Sankhahauli (*Convolvulus pluricaulis* Choisy.) as it is commonly referred to as is a perennial herb. It belongs to the family Convolvulaceae. It is an indigenous plant commonly found in the plains of Northern India and Bihar. It is widely used in Unani medicine and is also mentioned as a rasayana in Ayurveda, an ancient system of Indian medicine. It has been used in Unani medicine as brain tonic, anticonvulsant, nervine tonic, aphrodisiac, anti-inflammatory, antitussive, eye tonic, blood purifier, etc. According to modern science, it has several important activities such as anxiolytic, antidepressant, antioxidant, antiulcer, antibacterial, antifungal, neuroprotective, antidiabetic, antihypertensive, hypolipidaemic activity, etc. This review will deal the morphology, phytochemistry, pharmacological actions and uses, reported ethnobotanical studies for exploring the various medicinal properties of Sankhahauli.

## INTRODUCTION

*Convolvulus pluricaulis* Choisy, or Sankhahauli as it is commonly referred to as is a perennial herb. It is an indigenous plant commonly found in the plains of Northern India and Bihar. It is mentioned as a rasayana in Ayurveda, an ancient system of Indian medicine<sup>1,2</sup>.

Kingdom : Plantae

Sub kingdom : Tracheobionta

Super division : Spermatophyta

Division : Magnoliophyta

Class : Magnoliopsida

Sub class : Asteridae

Order : Solanales

Family : Convolvulaceae

Genus : *Convolvulus*

Species : *pluricaulis*



**Figure 1: Dried herbs of Sankhahauli**

### Synonyms<sup>3, 4, 5</sup>

*Convolvulus pluricaulis* Choisy

*Convolvulus microphyllus* Sieb. ex Spreng

### **Vernacular Names<sup>6,7</sup>**

Hindi:	Torki
Bengali:	Bhangra
Gujarati:	Jhinkigali
Marati:	Bhangra
Urdu:	Sankhauri
Punjabi:	Kodio
Sanskrit:	Sankhapushpi

### **Habitat and Distribution**

Sankhauri is a small, hairy, procumbent, diffuse, perennial herb. It grows in the plains of Northern India and Bihar<sup>2,4,6,8</sup>.

### **Morphology**

Sankhauri is a small, hairy, procumbent, diffuse, perennial herb that seems like a morning glory. It has a small, woody rootstock. Its branches are spread on the ground and can be more than 30 cm long<sup>3,7</sup>. Leaves are simple, alternative, elliptic-oblong or oblongovate, strong apiculate densely clothed with oppressed silky hairs, usually ½ an inch to 1.5 inches long<sup>1,2,7</sup>. Flowers are light blue, solitary 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 shape of the flower is like “Shankh” (a marine shell) that is why the name is Shankpushpi (Pushpa meaning flower)<sup>2,3,7</sup>. Fruits globose four-valved drooping capsulate<sup>2</sup>. Steam distillation of the fresh plants gives pale yellow oil with a green tinge and a characteristic odour<sup>1,2,7</sup>.

### **Part Used**

Whole plant<sup>4,6,8</sup>

Root and Bark<sup>4,8</sup>

Leaves and flowers<sup>3</sup>

### **Temperament**

Cold & Moist<sup>6,8</sup>

Hot & Moist<sup>4,9</sup>

### **Chemical constituents**

The plant contains carbohydrate-D-glucose, maltose, rhamnose, sucrose, and starch. It also contains proteins, amino acids and the alkaloids-convolvine, convolamine, phyllabine, convolidine, confoline, convoline, subhirsine, convosine, and convolidine along with scopolin and Flavon Coumarin, Beta-sitosterol, fatty acid and wax constituents, hydrocarbons, aliphatic and sterol. Alcoholic extract of plant yield kaempferol, Di-oh-cinnamic acid and Beta-stosterolglucos steroid of microphylllic acid<sup>2, 3, 10, 11, 12</sup>

### **Pharmacological actions mentioned in Unani classics**

Brain tonic<sup>4, 6, 8</sup>, Nervine tonic<sup>8</sup>, Aphrodisiac<sup>8</sup>, Hypoglycaemic<sup>6, 8</sup>, Anti-convulsant<sup>8</sup>, Anti-tussive<sup>8</sup>, Eye tonic<sup>4</sup>, Coolant<sup>8</sup>, Blood purifier<sup>4, 6, 8</sup>, Laxative<sup>4, 8</sup>, Antiemetic<sup>8</sup>, Anti-inflammatory<sup>4</sup>,

### **Pharmacological actions according to Ethnobotanical references**

Brain tonic<sup>3, 13</sup>, Anxiolytic<sup>3</sup>, Hypotensive<sup>3, 14</sup>, Antifungal<sup>3</sup>, Anaesthetic<sup>14</sup>, Antiulcer activity<sup>15</sup>

### **Therapeutic uses mentioned in Unani classics**

Palpitation<sup>6, 8</sup>, Diabetes<sup>4, 8</sup>, Blood disorders<sup>6</sup>, Gonorrhoea<sup>4, 8</sup>, Syphilis<sup>4, 8</sup>, Haemorrhoid<sup>4, 8</sup>, Excessive emission<sup>6</sup>, Leprosy<sup>4</sup>,

### **Uses according to ethnobotanical reference**

Thyrotoxicosis<sup>3</sup>, Rejuvenation therapy<sup>16</sup>, Mental stress<sup>17</sup>

### **Experimental / Clinical studies**

#### **Anxiolytic activity**

Following studies supported the anxiolytic activity of *Convolvulus pluricaulis* Choisy: Ethanolic extract of *Convolvulus pluricaulis* Choisy. petals showed an anxiolytic effect as evidenced by an increase in the time spent in open arms<sup>18</sup>. Ethyl acetate and aqueous fractions of the ethanolic extract of aerial parts of *Convolvulus pluricaulis* Choisy. showed significant anxiolytic effect. The ethyl acetate fractions reduced the neuromuscular coordination indicative of the muscle relaxant activity at a higher dose<sup>19</sup>. Another study showed nootropic and anxiolytic activity of aqueous methanolic extract of *Convolvulus pluricaulis* Choisy<sup>20</sup>.

#### **Antidepressant-like activity**

Only chloroform fraction of the total ethanolic extract of *convolvulus pluricaulis* Choisy. elicited a significant antidepressant-like effect in mice by interaction with the adrenergic, dopamnergic and serotonergic systems<sup>21</sup>.

### **Effect on learning and memory**

The ethanolic extract of *Convolvulus pluricaulis* Choisy. and its ethyl acetate and aqueous fractions significantly improved learning and memory in rats<sup>19, 22</sup>.

### **Antioxidant activity**

The methanolic extract of whole plant on *Convolvulus pluricaulis* Choisy. exhibited significant antioxidant activity<sup>23</sup>. Another study with ethanolic extract of *Convolvulus pluricaulis* Choisy. when tested *in vitro* showed antioxidant activity<sup>10, 24</sup>.

### **Antiulcer activity**

The study was conducted to evaluate the potential anti-ulcerogenic effect of juice of fresh whole plants of *Convolvulus pluricaulis* Choisy. against various experimental gastric ulcer models induced by ethanol, aspirin, 2 hr cold restraint stress and 4 hr pyloric ligation in rats<sup>10, 16</sup>.

### **Effect on thyroid gland**

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 T<sub>3</sub> and hepatic 5-D activity. These results indicate that the plant extract-induced inhibition in thyroid function is primarily mediated through T<sub>4</sub> to T<sub>3</sub> conversion<sup>10, 25</sup>.

### **Antibacterial / antifungal activity**

Methanolic extract of *Convolvulus pluricaulis* Choisy demonstrated a broad-spectrum of activity against both gram-positive (*Staphylococcus aureus*) and gram-negative bacteria (*Escherichia coli*)<sup>3, 10, 26</sup>.

### **Neuroprotective activity**

Aqueous extract of *Convolvulus pluricaulis* Choisy exhibited potent neuroprotective activity through anti AChE and antioxidant activity<sup>27</sup>.

### **Antidiabetic activity**

*Convolvulus pluricaulis* Choisy was found to be effective remedy for treatment of diabetes<sup>10</sup>.

### **Antihypertensive activity**

Clinical studies were conducted on 25 cases of arterial hypertension with the decoction of the drug. A gradual fall in blood pressure along with relief in symptoms was observed<sup>3, 28, 29</sup>.

It has been established that convolvine blocks the M-receptors of heart and intestine but raises the sensitivity of the M-receptors of salivary gland and CNS<sup>14</sup>.

It was found that the maximum hypotensive activity was noticed in the extract of Callus tissue cultured on BM. Supplemented with a higher concentration of casein hydrolysate<sup>30</sup>.

### **Hypolipidaemic activity**

Ethanollic extract of whole plant of *Convolvulus pluricaulis* Choisy. when administered to cholesterol fed gerbils, reduced serum cholesterol, LDL cholesterol, triglycerides and phospholipids significantly after 90 days<sup>1, 10, 28</sup>.

### **Adverse effects**

Not reported

### **Substitute**

Bramhi<sup>4</sup>

### **Dose**

In Unani literature, the therapeutic dose for Sankhahauli mentioned by various authors is as under: 7-9 grams

3-5 grams (Root)

Heart disease: Decoction of 10 leaves

Vomiting: 6 grams<sup>4, 6</sup>.

Diabetes: 6 grams<sup>4, 6</sup>.

Fasad-e-khoon: 6-9 grams<sup>4, 6</sup>.

### **Formulations**

Sankhahauli is an ingredient of the following preparations:

Abana

Majoon-e-Suparipak<sup>31</sup>

Thyrocap<sup>32</sup>

Shankhapushpi<sup>11</sup>

### **CONCLUSION**

Unani medicine is a traditional medical system widely practiced in south Asian countries, which was originated in Greek and developed by Arab physicians, so called Graeco-Arabic medicine. *Convolvulus pluricaulis* Choisy or Sankhahauli is a specific drug in Unani medicine and used in various disease conditions throughout the history. The characters, morphology, chemical constituents, medicinal properties and various other basic information can be easily understood from the present review. Review of ethnomedicinal, phytochemistry and pharmacology of this plant makes it a felicitous potential candidate for clinical trials.

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