

Shigru (*Moringa Oleifera Lam.*): A Critical Review

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Abstract

Cirrhosis and Chronic liver diseases are the leading causes of death in developing countries, though the prevalence is increasing in developed countries. There is an irreversible damage to liver parenchyma; it becomes fibrotic and yellowish/ orange in color. Alcohol consumption and chronic viral Hepatitis are the common causes. There are no drugs and related treatments available for the said disease. Ayurveda is a complete and holistic system of medicine in which a number of drugs with multifold beneficial actions are available and can prove to be beneficial for the patients, though a massive research is required to prove the beneficial effects of drugs.

Keywords

Ayurveda, *Shigru*, *Moringa oleifera*, *Vedanasthapana*, Pterygospermin, *Shobhanjana*.



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INTRODUCTION

Shigru (*Moringa oleifera* Lam.) is commonly known as Horse-raddish tree or Drum-stick plant belonging to the family Moringaceae. It is indigenous to sub-Himalayan tract and commonly cultivated throughout the country. In tropical and subtropical areas the seed pods and the leaves are used as vegetables. On the basis of flower colour there are two kinds of *shigru* viz., *shveta* and *rakta* which are bitter and sweet in taste and they are specifically known as *katushigru* and *madhushigru*, respectively. Due to the white colour of seeds and similarity to *maricha* (*Piper nigrum*) in appearance, it is known as *shveta maricha*. Properties and action of *shigru* are *svedopaga*, *krimighna*, *shirovirechana* and *vedanasthapana*. The drug is used for internal abscess and wounds. It is externally applied for alleviating spasms of legs. An antibiotic substance pterygospermin has been isolated from the roots; it exhibits high activity against gram positive and gram negative bacteria including *Mycobacterium tuberculosis* var. *hominis*, pathogenic moulds and fungi.

LITERATURE REVIEW

The literary review of the *Shigru* was started right from the *Vedas* up to recent research works to obtain thorough knowledge of drug. On comprehensive review of Ayurvedic classics it was found that *Shigru* is described in *Vedas*, *Charaka Vatakapholvana*, *Shushkarsha*, *Vatakapholvanavatashonita*, *Ashmarisharkara Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*.

In *Charaka Samhita*, *Shigru* is described in *Svedopaga*, *Krimighna*, *Shirovirechanopaga*, *Katukaskandha*, *Haritakavarga*. Use of seeds of *shigru* in soup of the leaves of *kashamarda* and *shigru* and of dry radish alleviates hiccough and asthma¹. It is useful in erysipelas, oedema, piles and skin diseases². In *Sushruta Samhita*, it is described in *Varunadi*, *Shirovirechana gana*. Soup of *shobhanjana* mixed with *pippali*, rocksalt and *chitraka* and mixed with oil is useful in *udarroga*³. The seeds of *shigru* should be taken as pressed snuff in *scrofula*⁴. It is also used in *kushthakshata*, *pleehodara* and *madhushigru* in *vidradhi*⁵. *Ashtanga Hridaya*, *Vagbhata* mentioned as warm paste of *shigru*, *karanja* bark, dried radish or *bibhitaka* must be applied in erysipelas⁶. The paste of *shigru*

root is used in calculus⁷. Juice of leaves of *shigru* used in eye diseases⁸. In *Sharangadhara Samhita*, it is described for the treatment of *antarvidradhi*, *atinidra* and *shleshmajanetrabhishyanda* (Sha.S.3-13-81, 27). In *Harita Samhita*, it is described for the treatment of *shleshmashula* and *sannipatajvara* (Ha.S.Ci.8, 3-2-133).

Shigru is mentioned in *Nighantus* also. In *Kaideva Nighantu* it is described as the description of *shigru*, *madhushigru*, leaves of *shigru*, flowers of *madhushigru*, flowers and seeds of *shigru*⁹. In *Bhavaprakash Nighantu*, it is described as types of *shobhanjana* and their properties, properties of juice of leaf of *shigrualkala* and properties of seeds of *shigru*¹⁰. In *Raj Nighantu*, it is described as the types of *shigru* as *nilashigru* and their properties¹¹.

Shigru is also mentioned in *Chikitsa Granthas* like *Chakradatta*, it is described for the treatment of *netraroga*, *krimiroga*, *udararoga*, *pleeharoga*, *vidradhi* and *karnashula* (C.D.Ci.59-34, 57-5,38-8,37-44,43-13). *Bhavamishra*, in his section *Bhavaprakash, madhyamakhandha* mentions *shobhanjanakwatha* for the treatment of *antarvidradhi*, *shigrumulalepa* in *snayukaroga* and *shigru taila* in *nasaroga*¹². *Shodhala*, *gadanigraha* used in *snayukaroga*, *pratishyaya*, *sarvanetraroga*.

Vaidya Kalidas, in his book *Vaidyamanorama*, describes for the treatment of *sadyovrana* and *masurika* (Vai.Ma.16-117,11-20). In *Vrindamadhava*, *shigrupatraswarasa* used in eye diseases (61-40,59-6) and *Bangasena*, it is described for the treatment of *urograha*, *kushtha*, *krimiroga* and *vatarakta*(Ban.5,66,22,68).

Scientific Classification¹³

Kingdom	:	Plantae
(Unranked)	:	Angiosperms
(Unranked)	:	Eudicots
(Unranked)	:	Rosids
Order	:	Brassicales
Family	:	Moringaceae
Genus	:	<i>Moringa</i>
Species	:	<i>oleifera</i>

Vernacular names

Classical Name	:	<i>Shigru</i>
Sanskrit name	:	<i>Shigru, Shobhanjana, Tikshnagandha, Mochaka.</i>
Hindi	:	<i>Sahijan, Munaga</i>
English	:	Horse-raddish tree, Drum-stick plant
Bengali	:	<i>Shajina</i>
Punjabi	:	<i>Sohanjana</i>
Gujarat	:	<i>Saragavo, Sekato</i>
Marathi	:	<i>Shevaga, Shegata</i>
Maharashtra	:	<i>Shegata</i>
Telugu	:	<i>Munaga</i>
Malayalam	:	<i>Sahajano</i>

Tamil : *Murungai*

Synonyms of *Shigru*¹⁴

- *Shigru* – With pungent smell and taste.
- *Akshiva* – Used as anti-narcotic.
- *Mochaka* – It is also useful in many other disorders.
- *Shobhanjana* – It is a beautiful tree.
- *Krishnagandha* - With pungent smell and taste.
- *Tikshnagandha* - With pungent smell and taste.
- *Ghanachchhada* – Having dense and luxuriant foliage.
- *Bahalapallava* - With pungent smell and taste.
- *Tikshnamula* - With pungent smell and taste.
- *Bahumula* – It has many roots.
- *Murangi* – Known as murangi.
- *Mulakaparni* – With pungent smell.
- *Vidradhighna* – Possesses anti-biotic property and is useful in infective disorders like abscess.
- *Haritashaka* – Leaves and also fruits are used as green vegetable.

Botanical Description of *Shigru*¹⁵

Shigru plant is a beautiful or fairly large tree with a height of 20-25 feet, dense leaves and luxuriant with pungent smell, many roots with pungent smell and taste, corky bark, soft wood, white and spongy possessing

antibiotic property useful in infective disorders like abscess; also used as vegetable.

Distribution & Habitat

Plant is indigenous in sub-Himalayan tract. It is commonly cultivated throughout the country. Plant is found in Assam, Gujarat and Uttar Pradesh. It grows almost throughout in India (up to lower elevation in hilly regions).

Phytochemical Constituents of *Shigru*

The root-bark of *Shigru* contains moringine alkaloids.

Root – The roots contain an antibiotic principle pterygospermin.

Leaf – The leaves of *Shigru* are rich in carotene and ascorbic acid. Analysis gave the following values: moisture 75.0%, protein 6.7%, fat (ether ext.) 1.7%, carbohydrates 13.4%, fiber 0.9% and mineral matter 2.3%, calcium 440, phosphorous 70 and iron 700mg./100g.; copper (1.1ug./g.) and iodine 51ug./kg.).

Seed - The seeds yield fixed oil 36.6%.

Bark- Bark yields a gum-resin.

Pods- The pods of *Shigru* contains moisture 86.9, protein 2.5, fat 4.8 and mineral matter 2.0%, calcium 30, phosphorous 1.10, and iron 5.3mg/100g., copper (3.1ug/g.) iodine (18ug./kg.) and oxalic acid (0.01). Pods also

contain carotene (as vitamin) 184 I.U., nicotinic acid 0.2mg. and ascorbic acid 120mg./100g.. Pressed juice of the Pods contains ascorbic acid oxidase. Pods contain a globulin (N 15.6 and sulphur 1.58%) and a prolamin (N 14.02, sulphur 1.43%). The Pods are remarkably rich in free leucine.

Kinds and Varieties

There are two kinds of *Shigru* in classical texts of medicine on the basis of flower colour viz. white (*Shveta*) and red (*Rakta*) which are bitter and sweet (*katu-madhura*) in taste and they are specifically known as *Katushigru* and *Madhushigru*, respectively.

Katushigru botanical identified as *Moringa oleifera* Lam., is occurring almost throughout country and available commonly, but ***Madhushigru***, botanically identified as *Moringa concanensis* Nimmo., is comparatively scarce in occurrence with restricted distribution, for the instance, in Bengal, Rajputana, Sindha and certain other areas including dry hills of Konkan, Andhra Pradesh and Coimbatore.

Leaves bi-pinnate somewhat longer than those of *Moringa oleifera* Lam and flowers pinkish yellow in colour in case of former species (*M. concanensis* Nimmo). Various parts of the plant are considered useful as those of *M.oleifera* Lam. Practically the tree of *Moringa concanensis* Nimmo resembles

with *M. oleifera* Lam. Another (or third) kind of *Shigru* is ***Nilashigru*** (blue variety) in texts of material medica (*Nighantu*). The medicinal properties of these kinds of *Shigru* or *Shobhanjana* are also specified in textual sources of medicine.

Pharmacodynamics¹⁶

Rasa : *Katu (Kshariya), Tikta*
Guna : *Laghu, Ruksha, Tikshna*
Virya : *Ushna*
Vipaka : *Katu*
Doshakarma : *Kaphavata shamaka.*

Medicinal Uses of *Shigru*

The drug *Shigru* or *Shobhanjana* is antihistaminic, abortifacient, anthelmintic, antiseptic, aphrodisiac, astringent, cardiogenic, carminative, stomachic and tonic. It is used in general anasarca, cancerous growth, glandular diseases, intermittent fever, obesity, paralysis of different organs, rheumatism, splenic disorders and wounds. The drug is used for internal abscess and wound. It is externally applied for alleviating spasms of legs. An antibiotic substance pterygospermin has been isolated from the roots; it exhibits high activity against gram positive and gram negative bacteria including Mycobacterium tuberculosis var. hominis, pathogenic moulds and fungi.

Root- The root is used in *snayukaroga*, *pratishyaya*, cough, hiccup, ear diseases, abscess, pain, fever, calculus, *visarpa* (skin disease).

Bark- The roots bark is used in *daddru* (skin disease).

Fruit- Fruit is used in *apachi*.

Leaf- Leaf is *chakshushya* (eye tonic), *brimhana*, aphrodisiac, *meda-krimihara* (anthelmintic), used in eye diseases, *sadyovrana*, *masurika*, *shushkarsha*, hiccup, asthma.

Flower- Flower is *chakshushya*, *kriminashaka*, blood purifier, used in *vidradhi*, *pleeha*, *gulma*.

Seed- The seeds are *chakshushya*, *vishnashana*, aphrodisiac, used in *siroroga*, *atinidra*, *nasaroga*.

Gum- Gum is used in ear diseases.

Some Facts about Moringa¹⁷

Moringa oleifera Lam., contains 92 Nutrients, 46 Antioxidants, 36 anti-Inflammatories, 18 Amino Acids, 9 Essential amino acids, nourishes the immune system, promotes healthy circulation, supports normal glucose levels, natural anti-aging benefits, provides anti-inflammatory support, promotes healthy digestion, promotes heightened mental clarity, boosts

energy without caffeine, encourages balanced metabolism, promotes softer skin, provides relief from acne, supports normal hormone levels.

Rare for a plant source

Moringa leaves contain all the essential amino acids to build strong healthy bodies. Examples of some few nutritional values of Moringa- proportion is 2 times the protein of yogurt, 3 times the potassium of bananas, 4 times the calcium of milk, 4 times the vitamin A of carrots, 7 times the vitamin C of oranges.

The vitamin component of Moringa leaves

Moringa has Vitamin A (β -Carotene), Vitamin B₁ (Thiamine), Vitamin B₂ (Riboflavin), Vitamin B₃ (Niacin), Vitamin B₆ Pyridoxine), Vitamin B₇ (Biotin), Vitamin C (Ascorbic Acid), Vitamin D (Cholecalciferol), Vitamin E (Tocopherol) and Vitamin K.

Pharmacological Studies

- Moringa oleifera provides a rare combination of **zeatin** (a potent antioxidant), **quercetin** (a flavonoid known for its ability to neutralize free radicals and relieve inflammation), **beta-sitosterol** (a nutrient superstar that blocks cholesterol formation or build-up and is an anti-inflammatory agent for the body), **caffeoylquinic**

acid (another powerful anti-inflammatory compound), and **kaempferol** (a key nutrient that promotes healthy body cellular function). All in all, enzymatically active and bioavailable Moringa oleifera provides **36 natural anti-inflammatory agents**. Free radical damage caused by electron-seeking, highly reactive, oxidative molecules has been identified as the source of many maladies through mechanisms such as inhibition of telomerase, changes to cellular permeability and DNA damage. It has been established that Moringa oleifera contains **46 different antioxidants**^{18,19,20,21}.

- According to Memorial Sloan-Kettering Cancer Center's website, "In vitro and animal studies indicate that the leaf, seed, and root extracts of Moringa oleifera have anticancer, hepatoprotective, hypoglycemic, anti-inflammatory, antibacterial, antifungal, antiviral, and antisickling effects. They may also protect against Alzheimer's disease, stomach ulcers, help lower cholesterol level, and promote wound healing²²."
- This "miracle tree" is able to provide all of the amino acids required by the human body. Protein is needed not only for the structural components such as muscle and tissues, but neurotransmitters, hormones, enzymes and immunoglobulins as

well. There are various nutrients that can have a beneficial effect on enhancing immune system function and Moringa oleifera certainly qualifies in this category due to the ability to provide several of these phytonutrients^{23,24}.

- Speaking of the immune system, one of the functions of the immune system is to keep pathogens from growing, proliferating and damaging tissues. Moringa oleifera has been shown to be anti-bacterial, anti-fungal, anti-viral and antibiotic, which will certainly lighten the load on the immune system^{25,26,27}.
- In addition, Moringa oleifera demonstrates the ability to be a potent detoxifying agent²⁸.

CONCLUSION

On comprehensive review of Ayurvedic classics it was found that *Shigru* is described in *Vedas*, *Charaka Samhita*, *Sushruta Samhita*, *Ashtangahridaya*. Some synonyms of *shigru* like *mochaka*, *shobhanjana*, *tikshnagandha*, *bahumula* described in various *Nighantu*. *Shigru* (*Moringa oleifera* Lam.), Family Moringaceae is commonly known as Horse-raddish tree or Drum-stick plant, is a traditional Ayurvedic medicine, has been used for centuries as a

antihistaminic, abortifacient, anthelmintic, antiseptic, aphrodisiac, astringent, cardiogenic, carminative, stomachic and tonic. *Shigru* is having *Laghu*, *Ruksha*, *tikshna Guna*, *Katu(kshariya)*, *Tikta Rasa*, *Ushna Virya* and *Katu Vipaka*. By the virtue of above properties it is *kaphavatashamaka*, *svedopaga*, *pleehahara*, *krimighna*, *shirovirechana* and *shothahara*. Doses of root bark juice is 10-20 ml., Seeds powder is 1-3gm. Part used is root bark, seeds. Specific formulations are *Shobhanjanadi lepa*, *Shyamadi churna*.

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