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A Comprehensive Literary Study on The Properties and Therapeutic Effects of Shunthi (*Zingiber officinale*) and Gokhur (*Tribulus terrestris*)



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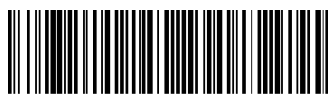
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ABSTRACT

The world's oldest medical system is Ayurveda and it has taken the foremost place in the management of various diseases, there are so many medicinal plants that have been used in the management of neuromusculoskeletal disorders like osteoarthritis, rheumatoid arthritis, siatica syndrome, cervical spondylolysis etc. The Shunthi (*Zingiber officinale*) and Gokhur (*Tribulus terrestris*) is both herbs that are often used by Ayurvedic practitioners as the remedy of those aforesaid ailments. So, in the present study, several ancient texts of Ayurveda and Ayurvedic pharmacological text (Nighantu) have been methodically reviewed to collect information regarding the properties and action of these herbs. After a review of literature collectively and methodically it has been found that the claim regarding anti-inflammatory, analgesic actions are logical and supportive to the basics of the Ayurvedic modalities against Rheumatism or Arthritis as VataNasak and Ama Pachak.

INTRODUCTION:

There are different medicinal components like Herbal, Minerals, Herb minerals compound that have been used in Ayurvedic treatment modalities Shunthi (*Zingiber officinale*) and Gokhur (*Tribulus terrestris*) in combination or individual use show Anti-inflammatory and Analgesic effect. There are a series of therapeutic actions like digestive, anti-diarrheal, anti-inflammatory, analgesic, antipyretic, etc. have been mentioned by Ayurvedic classics. Renowned practitioners of Ayurveda have also used these drugs and achieved significant success in the management of different diseases like diarrhea, dysentery, anorexia, arthritis, fever, etc. likewise Gokhur is a drug that has also been used by our classics from the ancient era to till death in the management of UTI (Urinary Tract Infection), pelvic inflammatory disease, reproductive disease, musculoskeletal disease, etc. Different textbooks of Ayurvedic Pharmacology, (Nighantu), Samhita Granthas like Charak Samhita, Susruta Samhita have been reviewed vividly to collect the data rather information's in support of properties action and pharmacodynamics of both these herbs. The present article is an effort to furnish the common and some special uses of both these drugs in a collective mood by methodical representation. Both the drugs have been used frequently by our ancestors in the management of rheumatism or arthritic affection as an anti-inflammatory analgesic. The mode of actions has also been raveled in support of that practice and claim.

Scientific Classification of Both Plants

Shunthi



Botanical Name: *Zingiber officinale*

Family: Zingiberaceae

Table – 1: Sanskrit synonyms of Sunthi in different Nighantus:

Synonyms	BPN	DN	KN	MPN	SGN	RN	PN	SN	NA
Sunthi	+	+	-	-	-	+	+	+	+
Mahausad	+	+	+	+	-	+	+	-	+
Viswa	+	+	-	-	-	+	+	-	+
Katubhadra	+	+	+	-	+	+	-	-	-
Katuyka	+		-	-	-	-	-	-	-
Nagara	+	+	+		-		-	-	+
Sringavera	+	+	-	+	+	+	-	-	+
Visvabhesaja	+	+	+	-	-	+	-	+	+
Sonth	-	-	+	-	-	-	-	-	+
Rahubhadra	-	-	+	-	+	-	-	-	-
Vishyaousadh	-	+	-	-	-	+	-	-	-
Adrak	-	-	-	+	+	-	-	-	-
Katugranthi	-	-	-	-	-	+	-	-	-
Katusnam	-	-	-	-	-	+	-	-	-

NATIONAL NAME:

English: Dry Zinger

Hindi: Sonth

Punjabi: Sonth

Bengali: Sonth

Gujrati: Sundh

Kanada: Shunthi

Kahmir: Sho-ont

Marathi: Sunt

Telegu: Sonti

Tamil: Shukku

Assamese: Adhasuth

Oriya: Sunthi

Caarese: VonoShunthi

Konkahi: Soonti

Malayese: Halyakring

Malayam: Ckukku

Name in Different region of India

French: Gingembre

German: Ingwer

Arab: Zanjibile –yabis

Pers: Zanjabile- khushk

Sing: Velicha- nguru

Urdu: Sonth



Distribution:

It is cultivated throughout the sub-Himalayan tract of Uttar Pradesh. Occasionally cultivated in Bihar and Orissa, West BENGAL, Himachal Pradesh, Madhya Pradesh, Gujrat, Decan, Karnataka, and Kerala and run wild in some places in the Western Ghats.

BOTANICAL DESCRIPTION:

Aromatic marshy herbs, with creeping root-stock.

Leaves: Distichour, ensiform, base equitant, peduncle leaf-like

Flowers: Green densely clouded on a cylindric, sessile spadix, Sepals, 6; arbuticular

Fruits: Few seeded berries

Seeds: Oblong

Macroscopic: Drug occurs as an entire rhizome or in pieces, rhizome laterally compressed bearing flattish ovate, Oblique branches on the upper side, each having a depressed scar at its apex,

Microscopic: Rhizome shows a few layered irregularly arranged, tangentially, elongated, brown cells of outer cork and 6- 12 rows of thin-walled, colorless, radially arranged cells of inner cork, Secondary Cortex consisting Hexagonal to polygonal, is diametric thin-walled, parenchymatous cells containing numerous circular to oval starch grains with striations and hilum at one end with clear concentric striations, measuring 5-25 micro in dia, idioblast containing large yellowish to Brownish globules of oleo resin walls of iol cells subrised, numerous closed, co-lateral, cortical, fibro-vascular bundles scattered throughout cortical zone.

Dose: Fresh juice 5-10 ml; Powder 1-2 gram. Syrup 2-4 ml.

Part used:

Rhizome: Larger bundle found scattered through stele, composed of Xylem, Phloem, Parenchyma, and sheath of sclerenchyma.

Powder: Light yellow, shows thin-walled parenchymatous cells septate fibers with oblique, elongated pits on their walls, reticulate and spiral vessels, oleo-resin cells, abundant single starch grains of varying shapes with eccentric hilum measuring 5- 25 micro in diameter.

Properties:

Rasa: Katu

Guna: Tikshna, Ruksha, Guru

Virya: Ushna;

Vipaka: Madhur

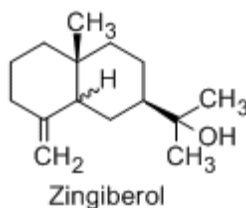
Karma: Vata hara, Kapha hara, Rochana, Dipana, Vedana Svarya, Hridya, Vrisya

Table – 2: Properties of Sunthi in different Nighantus

Properties	BPN	DN	KN	MPN	SGN	RN	PN	SN	NA
Rasa	Katu	-	Katu	Katu	Katu	Katu	-	-	-
Guna	Guru, Tikshna	Snighdha	Laghu, Snighdha	Guru	Laghu, Snighdha	Snighdha	-	Snighdha	Laghu, Snighdha
Virya	Ushna	Ushna	Ushna	Ushna	Ushna	Ushna	-	Ushna	Ushna
Vipaka	Madhur	Katu	Madhur	-	Madhur	-	-	Madhur	Madhur

Chemical constituents:

Volatile oil containing cinolezingiberol and sesquiterpene like zingiberene, bisbolene and sesqui phellandrene, gingerosol in the oleo-resin.



Substitute and adulterants:

There are several commercial varieties of ginger, derived from *Z.officinale*. Apart from these, some types are derived from other species, viz. Japanese zerumbet Rose. Ex Sm. The rhizomes of *Z. casummar* Roxb are sometimes used as a substitute for *Z. officinale*.

Contraindication: Zinger being ushnaand tikshnait should not be used in anemia, dysuria, bleeding disorder, ulcer, pyrexia, and in summer season and autumn. It is to be taken with caution in pregnancy, lactation, abnormal bleeding, complaints, and allergic persons to ginger.

Drug interaction: Ginger can interact with anti-inflammatory medications such as ibuprofen. It can also interact with aspirin, warfarin, heparin, and other drugs that affect bleeding tendencies or platelet count.

Pharmacology: Zinger has anti-inflammatory activity. It is specifically used in Amavata where the predominance of Ama in the pathology of Arthritis is seen. Patients receiving 3-7 gram of powder ginger daily for about 2 months shows a significant reduction in pain and swelling associated with Rheumatoid Arthritis. Ginger is well considered as effective as acetylsalicylic acid in reducing carrageen in induced edema. Ginger may act in a similar manner NSAIDS which interfere with prostaglandin biosynthesis. It is found that 6-gingerol and 6-segol have analgesic and antipyretic properties. Ginger oil is also known to suppress inflammation in Arthritis.

Ginger has anti-platelet aggregation property. A dose of 10 grams of Ginger daily for a long period reduces platelet aggregation. In addition to inhibiting platelet aggregation, Ginger also reduces platelet thromboxane synthesis. This effect is seen by the consumption of 5 grams /day of ginger powder.

Ginger is known to have antimicrobial and antifungal activity. It is effective against both gram-positive and gram-negative bacteria. Dried ginger rhizomes exhibit anti rhinovirus activity in the plaque reduction taste. Rhinovirus is the Virus associated with the common cold. The effect is due to specially bitasesquiphellondrene.

Adverse effect: The rare side effects are increased bleeding tendency, Rash. Itching, Swelling of the tongue lips, or throat, and irregular Heartbeats. The common or usual side effects, which do not require any medicinal aid are gases, abdominal distention, and Headache.

RESULTS AND DISCUSSION

Table – 3: Therapeutic uses of Sunthi in Different Nighantus

DISEASES	BPN	DN	KN	MPN	SGN	RN	PN	SN	NA
Swas	+	+	+	+	+	-	+	+	+
Kasa	+	-	+	+	+	-	+	+	+
Chardi	+	-	+	+	+	-	-	+	-
Hikka	-	-	+	+	-	-	-	-	+
Vatakaphavikara	-	-	-	+	-	-	-	+	-
Vibandha	-	-	-	+	-	-	-	+	-

DISEASES	BPN	DN	KN	MPN	SGN	RN	PN	SN	NA
Brishanshula	-	-	-	-	-	-	-	-	-
UdarRoga	+	+	+	-	+	-	-	+	-
Arsha	-	-	-	-	+	-	-	+	-
Aruchi	-	+	-	-	-	-	+	-	-
Pratisaya	-	-	-	-	-	-	+	-	-
Pandu	-	+	-	-	-	-	-	+	-
Samgrahani	+	-	-	-	-	-	-	+	-
Sotha	+	+	+	-	-	+	-	-	-
Sleepada	+	+	+	-	+	-	-	-	-
Sula	+	-	+	-	+	-	-	-	-
Gulma	-	-	-	-	-	-	-	-	-
SukraDourbalya	+	-	-	-	-	-	-	-	-
Hridroga	-	-	+	-	-	+	-	-	-
Kanthyaroga	-	-	-	-	-	+	-	-	-
Agni Deepak	-	-	-	-	-	+	-	-	-

Table – 4: Position of Sunthi in different Ayurvedic Text

Nighantu	Varga (Family in Ayurveda)
BPN	HarityakadiVarga
DN	SatapuspadiVarga
KN	AusadhiVarga
MPN	SunthyadiVarga
SGN	HarityakadiVarga
RN	PippalyadiVarga
PN	PippalyadiVarga
SN	2 nd chapter
CHARAK	Triptighna, Arsoghna, Dipaniya, Sliprasaman, Trishnanigraha
SUSRUTA	AusadhVarga
VAGHBAT	Pippalyadi
ArdrakadiVarga	NA

GOKSHURA



BOTANICAL NAME: *Tribulus terrestris*

FAMILY: Zygophyllaceae

Table-5: Sanskrit Synonym of Gokshura in different Nighantus

Synonyms	BPN	DN	KN	MPN	SGN	RN	PN	SN	NA
Gokantak	+	+	+	+	+	-	-	-	-
Kantaphala	-	-	+	+	+	-	-	-	-
Bhakhhar	-	-	+	-	+	-	-	-	-
Swadukantak	+	+	+	+	-	-	-	-	-
Swadanstak	-	-	+	-	+	+	+	-	+
Byaladanstra	-	-	+	+	+	+	-	-	-

Synonyms	BPN	DN	KN	MPN	SGN	RN	PN	SN	NA
Goksharu	-	-	+	-	-	-	+	-	-
Gokshur	-	+	+	+	+	+	-	-	+
kshur	-	-	+	-	-	-	-	-	-
Saranga	-	-	+	+	+	-	-	-	-
Shalasingat	-	-	+	-	-	-	-	-	-
Trikantak	+	-	+	+	+	-	-	-	-
Trik	-	-	+	+	+	-	-	-	-
kantak	-	-	-	-	-	+	-	-	-
Vadra kantak	-	-	-	-	+	+	-	-	-
Khurak	-	-	-	+	+	+	-	-	-
Mahanga	-	-	-	-	-	+	-	-	-
Dushchakram	-	-	-	-	-	+	-	-	-
Gokshurak	-	+	-	-	+	+	-	-	+
Khurango	-	-	-	-	+	+	-	-	-
Vakshak	-	+	-	-	-	-	-	-	-
Saranga	-	+	-	-	+	-	-	-	+
Kantakatrik	-	+	-	-	-	-	-	-	-

Bhaksyantaka	+	-	-	+	+	-	-	+	-
Swadamstra	+	-	-	-	-	-	-	-	+
Sthulasrngata	-	-	-	-	-	-	-	-	-
Iksugandhika	+	-	-	-	+	-	-	-	-
Palamkasa	-	-	-	-	-	-	-	-	-
Vanasrngata	-	-	-	-	+	-	-	-	-
Lamkasa	-	-	-	-	+	-	-	-	-

VERNACULUR NAME:

Hindi: Gokharu

Telegu:Palleru

Tamil: Neringi

Sanskrit: Bahukantaka

Punjabi:Bakhra

Bombay: Gokhru

Urdu: Gokharu



INTERNATIONAL NAME:

Afganistan: Krunda

Arab: Bastitaj

C.P: Gokhru

English: Calthrops

Pers: Kharekhasak

South Africa: Devils thorn

Malaysia: Neringil

English: Cowhage

HABITAT:

All over India especially North & South India.

BOTANICAL DESCRIPTION:

Shrub: Spreads on land with 0.5 -1 mts of height

Branches: Spread from all the sides

Leaves: Like that of gram plant.

Flowers: Small, yellow-colored with five petals.

Fruits: Slightly pentagonal having 2-3 sharp thorns

Seeds: contain scented oil.

Roots → 10–13 cm long smoky with a slightly strong smell and sweet. Flowering occurs in autumn followed by fruiting.

i) Macroscopic:

ii) Microscopic:

iii) Pharmacognosy

Root and fruit: Occurs in pieces, 7–18 cm long and 0.3–0.7 cm in diameter, cylindrical, fibrous, frequently branched, bearing a number of small nodules, fracture fibrous, odouraromatic taste sweetish and astringent. Fruit is stalked, globose, possessing fire woody wedge-shaped cocci, covered with two pairs of short spines, one pair larger than the other. Microscopically the pericarp is differential ted into epicarp. The outer surface of the epicarp is covered by non-glandular trichomes. The endocarp is 3–4 layered, composed of sclerenchymatous cells containing prismatic crystals of Calcium Oxalate. Vessels have simple pits and some show helical thickening. Fibers are lignified, linear long with tapering ends.

Dose: Fruit Powder: 2.5 to 5 grams

Parts used: Fruit, root, pentad.

Fruits of Gokshura



properties:

Rasa: Katu

Guna: Tikshna, Ruksha, Guru

Virya: Ushna

Vipaka: Madhur

Karma: Vatahara, Kaphahara, Rochana, Dipana, Bhedana, Svarya, Hridya, Vrsya

Table-6: Properties of Gokhur according to different ayurvedic text.

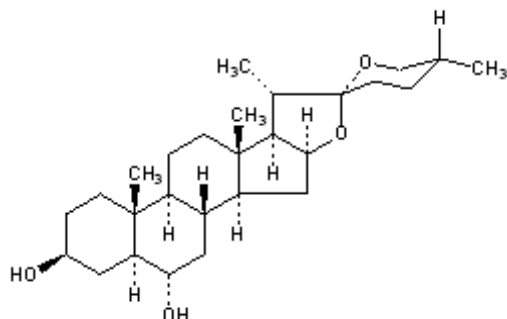
Properties	BPN	DN	KN	MPN	SGN	RN	PN	SN	NA
Rasa	Madhur	-	Madhur	Madhur	Madhur	Madhur	Madhur	Madhur	Madhur
Guna	Laghu, Ruksha	-	-	-	-	-	-	-	-
Virya	Seeta		Seeta	Seeta	Seeta	Seeta	Seeta	Seeta	Seeta
Vipaka	-	-	-	-	-	-	-	-	-

CHEMICAL CONSTITUENTS:

Fruits: Chlorogenin, Diosgenin, Gitogenin, Rutin, Rhamnase

Roots: Campesterol, Beta sitosterol and stigma sterol, new trigogenin

Aerial Parts: Ostragalin, Dioscin, Terrestrosiders etc.



Chlorogenin

Identity, purity, strength:

ROOT:

Foreign Matter:

Not more than 2%

Total ash:

Not more than 13%

Acid – insoluble ash:

Not more than 3%

Alcohol – soluble extractive:

Not less than 4%

Water-soluble extractive:

Not less than 10%

Fruit:

Foreign Matter:

Not more than 2%

Total ash:

Not more than 15%

Alcohol – soluble extractive:

Not less than 6%

Water-soluble extractive:

Not less than 10%

Substitute and adulterants :

The fruits of *pedalium murex* Linn. Are occasionally substituted to *T. terrestris*, being considered as large Gokharu. The fruits of *Acanthospermum hispidum* DC resemble are individual cocci of the Tribulus and are frequently found mixed with the later.

Clinical trials:

An alcoholic extract of the drug was prepared and tried in a series of cases. The drug undoubtedly has diuretic properties but shows no advantages over many of the diuretics in British Pharmacopoeia. The diuretic properties are no doubt due to the large quantities of the nitrates present as well as the essential oil which occurs in the seeds.

Contraindication: At *T. terrestris* is very safe and its LD₅₀ is very high, no contraindications are noted with *T. terrestris*.

Drug interaction: No contraindication has been reported with plant or ant synthetic drug with *T. terrestris*. No drug has been reported with this plant. Many Synthetic drugs with *T. terrestris*.

Table – 7: Therapeutic uses of Gokhur in different Nighantus

Diseases	BPN	DN	KN	MPN	SGN	RN	PN	SN	NA
Valya	-	-	-	-	-	+	+	+	+
Sukradusti	-	-	-	-	-	-	+	+	-
Mutraghata	-	-	-	-	-	-	+	+	-
Mamsasosh	-	-	-	-	-	+	-	-	-
Mutrakriccha	-	+	+	+	+	+	-	-	+
Asmari	+	-	+	-	+	+	-	-	+
Hridroga	+	+	+	+	-	-	-	+	+
Prameha	-	+	+	+	+	-	-	-	+
Sula	-	+	-	-	-	-	-	+	-

Diseases	BPN	DN	KN	MPN	SGN	RN	PN	SN	NA
Bahumutrata	+	-	-	-	-	-	-	-	-
Swas	+	-	-	-	-	-	-	+	+
Kas	+	-	-	+	-	-	-	+	-
Dahanasak	-	-	-	-	+	-	-	+	-
Arsha	-	-	-	-	-	-	-	-	-
Vastivata	-	-	-	-	-	-	-	+	-
Pradara	-	-	-	-	-	-	-	-	+
Vataroga	-	-	-	-	-	-	-	-	-

Table – 8: Position of Gokshura in different Ayurvedic Text

Nighantu	Varga
BPN	GuduchyadiVarga
DN	GuduchyadiVarga
KN	AusadhiVarga
MPN	AbhyadiVarga
SGN	GuduchyadiVarga
RN	SatajhadiVarga
PN	HarityakadiVarga
SN	1 st Pratham Vag
NA	PatladiVarga
CHARAK	SothaHara,MutraVirechaniya,Krimighna
SUSRUTA	Vidarigandhadi, Virtarvadi, Laghupanchamulavirtarvadi
VAGHBAT	VirtarvadiGana, AusadhaVarga

Important Ayurvedic Preparation:

- 1) Gokhuradiggulu
- 2) GokhuradiRasayan
- 3) GokhuradiChurnam
- 4) GokhuradiAvaleha
- 5) GokhuradiKwathe
- 6) Dosamularishtha
- 7) Gokshuradimodaka

RESULTS AND DISCUSSION

Shunthi (*Zingiber Officinale*) and Gokhur (*Tribulus terrestris*) are some of the most used herbal plants in the field of Ayurveda. Shunthi is a plant of Zingiberaceae and Gokhur is a plant of Zygophyllaceae family. Shunthi and Gokhur is described as Ama Pachak and SothaNasak as per Charak Samhita, Dhanwantari Nighantu, Kayadev Nighantu, Bhavprakash Nighantu, etc. Results from the above studies it has been found that the dry Rhizome of Shunthi (*Zingiber Officinale*) possessing the Rasa: Katu, Guna : Ushna, Tikshna Guru, Virya: Ushna, Vipaka (effect after digestion): Madhur, and Gokhur (*Tribulus terrestris*) possessing Rasa: Katu, ViryaUshna, Vipaka(effect after digestion): Madhur, Guna : Ruksha, Sita, Laghu. Shunthi and Gokhur have this kind of property so it is used in Aruchi and Abipaka this kind of disorder. According to different authors, Shunthi and Gokhur will increase Agni when taken internally. The information regarding the pharmacodynamics of Shunthi and Gokhur is highly significant because Vatakapha hara action of Shunthi and Gokhur plays a great role to restrict the kledajanak movement of Koshtha in proper and other srotas in general. Shunthi and Gokhur were Shunthicaring the properties like Tikshna, Ruksha, Guru &UshnaVirya.So it is very much potent towards pacifying Vata&Pachana of Ama (Toxic propduct present in the body). Specially it is a nutritive agent also because it's madhurvipaka. Gokhur carries the properties like Tikshna, Ruksha, & Guru, and UshnaVirya and by its vipakaMadhurso it is also VataNasak Ama Pachak and Poshakagent. So as per Ayurvedic view, it is UshnaVirya. It could pacify Vata by reducing the sitaguna

(Coldness) of Vata by enhancing the power of Agni in the human body through Deepan Pachan action reduces the Ama (undigested food materials). It has the properties of srotosodhan so it is very much effective towards correcting of metabolic fire and clearing of srotos or (microchannels) of the entire body so the claim like VataNasak and Ama Pachak action is found logical and could show Anti-inflammatory, analgesic action for its Pharmacodynamics. Gokhur is part of Doshamoola as well as SwalpaPanchamoola and its found VataNasak as per textual reference. It possesses the properties Rasa: Katu, Guna: Tikshna, Ruksha Guru, Virya: Ushna, Vipaka: Madhur as it is a herb of UshnaVirya properties so it has an antagonist action against Sita Guna of Vata as it is Madhur Rasa so it nourishes the structure like Nerve, Muscle fibers, and bones so it is a VataNasak and Agni Deepak agent as per textual reference of Ayurveda through such literary review it should be stated that –

- 1) Shunthi is a potent herbal agent that could be useful in the management of a series of VataRoga by enhancing the agni reducing Ama dosh of the koshtha and clearing the microchannels of the body through srotosodhan action simultaneously Gokhur works against Vayu by enhancing the agnibala and by the Madhur Vipaka actions it nourishes the weak or injured Nerve, Muscles, Bones. So, it could be concluded there are sufficient literary information in favor of these two medicinal plants item where Shunthi possess the properties Rasa: Katu Guna: Tikshna, Ruksha, Guru, Virya: Ushna, Vipaka: Madhur and Gokhur possess the properties like Rasa: Katu, Guna; Tikshna, Ruksha, Guru, Virya: Ushna, Vipaka: Madhur.
- 2) As per the pharmacodynamics, both the herbs are also to show the action like srotosodhak, agnideepan, Pachan (Digestive), and VataNasak action.
- 3) Both these plants could be used in Osteoarthritis, Rheumatoid Arthritis, and degenerative arthritis.

CONCLUSION

From the above literary reference, it could be concluded that Shunthi and Gokhur are potent VataKaphaNasak Drugs. Shunthi Fresh juice 5-10 ml; Powder 1-2 gm. Syrup 2-4 ml. in this form could be effective in VataKaphanasak disorder. Gokhur in this dose Fruit Powder: 2.5 to 5 grams can pacify vatakaphanasak disorder. Both these two drugs have additional benefits like

deepana (enhance enzymatic action), pachana (digestive), rochana (appetizer), srotosodhan (channel clearing), yakrituddipaka (hepato – stimulant) like actions.

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