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Review Article

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TO STUDY THE EFFICACY OF MASOOR DAL (LENS CULINARIS MEDIK.)

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ABSTRACT

Masoor suggested that its one of the herb traced easily in ancient classics since vedic literature. During vedic period it is mentioned mainly as one of the Dasha gramya dhanya. In Samhitas Masoor is mentioned in Shami dhanya varga of Aahar dravya and in some of the formulations in treatment of various disorders. Different properties of Masoor as Madhura, Kashaya rasa, Sheeta veerya, Ruksha, Laghu guna are explained by various Acharyas. Varnya action of Masoor is first explained in Ashtang samgraha. Different Aahara Kalpana of Masoor as Yusha, Yavagu, Soup etc. are mentioned as pathya in the treatment of diseases like Jwara, Raktapitta, Arsha, Pandu, Vaatarakta, Vrana, Visarpa etc. Considering the classification in Nighantu, it is observed that Masoor is described in all the Nighantus. It is explained in Dhanya varga of most of the nighantus. Masoor is explained as amgrahi, Virukshan, Varnya, Adhmaankara etc. Therapeutic indication of Masoor include its action on 22 different diseases as Jwara, Raktapitta, Pandu, Arsha, Visarpa, Vaatrakta, Vaatvyadhi, Mutrakruchchha, Vrana, Visarpa, Kushtha, Netra roga etc. Modern texts include description of Masoor with reference to its botanical description, habitat, morphology, cultivation and propagation, geographical distribution, pharmacological and therapeutic uses etc. In review of literature it is seen that many biological activities of Masoor such as Anti-hyperlipidemic, Anti-diarrheal, Anti-spasmodic, Bronchodilator, Vasodilatory, Anti- oxidant, Nephro protective had been screened by other scholars.

KEYWORDS: Masoor, Shami dhanya, Varnya.

INTRODUCTION

Ayurvedic classics have mentioned the group of herbs as well as single herbs having varnya action, which can be used for improving complexion of the skin. Charak mentions a group of 10 drugs known as 'Varnya dashemani'. Sushrut and Vagbhat also described Varnya gana including different herbs. In Bhavaprakasha Nighantu, many single drugs have been mentioned as complexion promoters. Masoor is the one amongst the different herbs mentioned for its Varnya action. In ayurvedic classics Masoor is described in Shami varga of Ahar dravyas. Apart from it's use as a pathya ahar in various disorders it is also mentioned for its Varnya action.

In Bhavaprakasha Samhita and Yoga Ratnakar it is mentioned that Masoor pounded with milk and then mixed with ghee is applied on face which, by a week, becomes lustrous. Till now Masoor (Lens culinaris Medik.) is been studied for it's anti-oxidants, hepato protective, antidiabetic, hypolipidemic activity. In India, it is traditionally used as in the form of Ubtan, scrubs etc. for improving skin complexion. As it is very safe to use and till date no side effect is recorded, the Masoor daal choorna is used in babies also.

LITERATURE REVIEW

A) REVIEW OF MASOOR

A.1. HISTORICAL REVIEW OF MASOOR

1. MASOOR IN SAMHITA-

In this period, Bruhattrayi have mentioned Masoor in Shami dhanya varga of Ahar dravyas and in some of the formulations. It has been indicated for both the preventive and curative purposes. Varnya action of Masoor was also mentioned in Samhitas.Details are elaborated below.

1) CHARAK SAMHITA: (1000 B.C.) In Charak Samhita Masoor is mentioned in different yogas. Properties of Masoor are explained in Annapanavidhi adhyaya (Cha. Su. 27) in Shami dhanya varga. Masoor yusha and soup is explained as pathyahaar in the chikitsa of different vyadhis.

Table no. 1: References of Masoor from Charak Samhita.

Sr. no.	Reference	Formulation	Adhikar	Indication	Page no.
1	Cha. Su. 27/28-29	General properties of Shami dhanya including Masoor	Annapanvidhi	Properties of shami dhanya Madhura, Kashaya, Laghu Ruksha	155
2	Cha.Chi. 3/188	Masoor yusha	Jwara chikitsa	Jwara	415
3	Cha. Chi. 4/37	Masoor yusha, Masoor soup	Raktapitta chikitsa	Raktapitta	430
4	Cha. Chi. 4/46	Masooradi yavagu	Raktapitta chikitsa	Raktapitta	430
5	Cha.Chi 14/204	Masoor soup	Arsha chikitsa	Raktarsha	509

Table no. 2: References of Masoor from Sushruta Samhita.

Sr. no.	Reference	Formulation	Adhikar	Indication	Page no.
1	Su.Su. 7/10	Swastika yantra varnan (Masoorakr uti keel)	Yantravidh	Asthividashta shalya uddharnartha	31
2	Su. Su. 7/14	Shalaka yantra varnan (Masoor dala matra mukhe)	Yantra vidhi	Srotogata shalya uddharnartha	33
3	Su. Su. 8/10	Shastra dhara	Shastravacharani ya	Bhedananam Masoori dhara	40
4	Su. Su. 20/5	Explanation of Ahara varag	hitahitiya	Aahara varga varnan	90
5	Su. Su. 21/19	Aahara which causes vaat prakopa	Vranaprashna	Vaat prakopa aahar hetu	103

2. MADHAVA NIDAN: (700 A.D.)
Being a classic book of Ayurveda about the diagnosis oh diseases, it doesn't describe herb in it.

3. CHAKRADATTA (1100 A.D.)
Chakrakradatta a commentor on Charaka samhita also mentioned many formulations of Masoor in Jwar, Grahani, Raktapitta, Gulma, Visarpa chikitsa. Different lepa including Masoor as one of the ingredient are mentioned in Kshudraroga chikitsa.

A.2: Nirukti of Masoora-
It indicates that it has Madhura vipaka and is easy to digest.

Botanical name: Lens culinaris Medik.
Meanings: The genus name Lens is suggestive of the lens-like shape of the lentil seed.
A.3: Synonyms of Masoor: Masoor, Madhura, Soopya, Pruthava, Masoorika, Masoori, Mangalya, Pandura, Raagdali, Shoora, Durubeeja, Masooraka, Mangalyaka.

A.4: Vernacular Names: Though the drug today is very well known by its scientific name, still the knowledge of local name of a plant in a particular place is very important to recognize any drug from any region. Similarly, the vernacular names of plant Masoor are mentioned as follows:
a) Indian Dialects: (A. P. I., Part1, Vol.3, Pg. 121)
1. Sanskrit: Supya, Pittabheshaja
2. Bengali- Masuri
3. English- Lentil
4. Gujrati- Masura, Masoor Masur
5. Hindi- Masur
6. Kannada-Masura Bele
7. Malayalam- Chanam payar, Vattupparupu
8. Marathi-Masur, Masssora

A.5: Classification of Masoor
A) Classification of Masoor as per Ayurveda:
1) Cause-Effect Relationship – Karya dravya
2) Living-Non-living – Chetana Dravya
3) Constitution – Pruthvi, Aapa
4) Origin – Audbhida, Vanaspatya
5) Usage – Ausadhi dravya
6) Morphology – Kshupa
7) Life span – Varshayu
8) Rasa (Bh. P.) – Madhura
9) Vipaka (Bh. P.) – Madhura
10) Veerya (Bh. P.) – Sheeta
11) Action on Dosa (Bh. P.) – Pacifies Kapha, Pitta
12) Rogaghnata (Bh. P.) - Jwara
13) Karma (Bh. P.) – Sangrahi, Vaatakara

A.6: Botanical Description:
1) Scientific name: Lens culinaris Medik.
2) Family: Fabaceae (Papilionaceae)
3) Botanical synonyms: - The principal synonyms of Lens culinaris are
a) Cicer lens (L.) Willd.
b) Ervum lens L.
c) Lens esculenta Moench
d) Morphology: Herb

Table No. 03: Taxonomy of Masoor

Kingdom	Plantae	Plants
Subkingdom	Tracheobionta	Vascular plants
Superdivision	Spermatophyta	Seed plants
Division	Magnoliophyta	Flowering plants
Class	Magnoliophyta	Dicotyledons
Subclass	Rosidae	
Order	Fabales	
Family	Fabaceae/Leguminosae	Pea family
Genus	Lens Mill.	Lentil
Species	Lens culinaris Medik.	Lentil

4. **Key Characters of family Fabaceae/Leguminosae**

- Habit: Herbs, Shrubs, Trees, Climbers
- Roots: Mostly having tubercles.
- Leaves: Alternate, pinnately compound, rarely simple with a swollen leaf base called as pulvinus.
- Flowers: Bisexual and complete regular or zygomorphic, hypogynous or slightly perigynous
- Calyx: sepals usually 5 in no., sometimes 4.
- Corolla: petals usually 5 in no., with the add one posterior (towards the axis), sometimes 4, free or united
- Androecium: Stamens usually ten or numerous, sometimes less than ten, free or united
- Gynoecium: Carpel 1, Ovary 1-celled with 1 to many ovules, placentation marginal.
- Fruit: A legume or pod.
- Seed: Mostly exalbminous

A.7: Types of Masoor

Dalhana, the commentor of Sushruta Samhita states two varieties of Msoor as

- Masoor- having Krushna varna
- Mangalyaka- having Pandu varna

A.08: Chemical constituents= (Database vol 5, Pg.no. 232)

- (Seed coat) =Tricetin, luteolin, a diglycosyldelphinidin, two proanthocyanidins Phenolic acids viz, p-coumarin and ferulic acid,
- (Seeds)=four kaempferol triglycosides, 2(S),4(R)-4 hydroxyargenine, triterpene alcohols, 3-oxosteroids, vitamin B and proteins
- (cotyledons)=pinitol digalactoside-ciceritol, kaempferol glycoside, 3,4',7- trihydroxyfavone
- (Plant)=indolyl acrylic acid, lenticin, tricetin, luteolin, diglycosyldephinidin, proanthocyanidins, kaempferol glycosides, 5- deoxykaempferol, trans-ferulic acid, trans-p-coumaric acid, syringic acid, aflatoxin, 4'-7-dihydroxy-3',4',7'-trihydroxy-4',7-dihydroxy-3'- methoxy-flavones and variabilin

A.09: Action on Dosha-Dhatu-Mala=

A) Dosha- Vata=gets aggravated because of Sheeta veerya and Laghu, Ruksha guna.

Pitta=gets pacified because of Madhura rasa and Vipaka and Sheeta veerya.

Kapha=gets pacified because of Lghu, Ruksha guna and Kashaya rasa.

B) Dhatu

1. Rasa= Vardhan, Jwarahara
2. Rakta= Varnya, Raktadoshahara
3. Mamsa= Bruhana, Balya
4. Meda= Medohara
5. Asthi= Not specific
6. Majja= Chakshushya
7. Shukra= Not specific

C) Mala- Sanghrahi

A.10: Dosage: Churna=10-20 gm

A.11: Pharmacological activities of Masoor

- **Anti-hyperlipidemic activity** -Intragastric administration of extracts of Lens culinaris at various dose levels to the rats caused a significant decrease in plasma lipid levels. However, LCME (400 mg/Kg) was found to possess more antihyperlipidemic activity as compared to other extracts. It exhibited a decrease (%) of 57.51, 66.93, 66.95, 111.78 in TC, TG, VLDL, LDL levels, and an increase of 59.46% in HDL levels respectively. TPC (608 mg gallic acid equivalent/g of sample) and TFC (128 mg quercetin equivalent/g of sample) were also found highest in LCAE. Conclusion: Results suggest that the extracts of Lens culinaris contain active phytoconstituents which might be responsible for antihyperlipidemic activity of the seeds.
- **Anti-diarrheal, Anti-spasmodic and Bronchodilator activity** - These results suggest that Lens culinaris possesses antidiarrheal, antispasmodic and bronchodilator activities mediated possibly through a combination of Ca++ antagonists anti cholinergic and phosphodiesterase inhibitory effect and this study provides sound background to it's medicinal use in disorders of gut and airways hyperactivity, like diarrhea and asthma.
- **Vasodilatory, Blood pressure lowering and Cardio depressant activity-** The crude extract of L. culinaris induced dose-dependent (3-30 mg/kg) fall in the arterial pressure of rats under anesthesia. When tested in rat aortic ring preparations, L. culinaris at concentration range of 0.03- 5.0 mg/mL relaxed high K+ (80 mM) and phenylephrine (1 μM)-induced contractions, like that caused by verapamil. In isolated guinea-pig atria, L. culinaris caused inhibition of atrial force and rate of spontaneous contractions, similar to that exhibited

by verapamil. These data indicate that L. culinaris exhibits blood pressure lowering potential, mediated possibly through Ca++ channel blockade mechanism.

- **Anti-inflammatory and Antioxidant activities-** The methanolic extract contains flavonoids, tannins, proteins and glycosides. Extract was reducing rats inflammation in dose dependent manner and 200 mg/kg showed significant anti-inflammatory activity. The natural antioxidants 57 level also significantly increases after extract administration in the rats. The anti-inflammatory and antioxidant effects of Lens culinaris Med. Seeds may be due to presence of flavonoids and tannins.
- **Nephroprotective activity-** Nephroprotective activity of hydroalcoholic extract of Lens culinaris was tested at two dose levels i.e., 200 and 400mg/kg b w. Nephroprotective activity was assessed by determining serum markers, urinary parameters, lipid peroxidation and antioxidant levels in renal tissue. Histological and immunohistochemical studies had been carried out in the renal tissue. Doxorubicin had induced marked nephrotoxicity manifested by a significant increase in Serum creatinine, Blood urea nitrogen, Urinary total protein, lipid peroxidation and decrease in Urinary creatinine, catalase (CAT), superoxide dismutase (SOD), reduced glutathione (GSH). The administration of extract at both dose levels restored the levels of serum cretinine, urinary creatinine, urinary total protein, LPO SOD and GSH, CAT. The protection is almost equal at both dose levels. Histological and immune histochemicalstudies also substantiated the biochemical parameters. The preset study reveals that hydroalcoholic extract of seeds of Lens culinaris partially ameliorated doxorubicin-induced renal damage.

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