

COMPREHENSIVE REVIEW OF KESHAR (*Crocus sativus* Linn) FROM CLASSICAL AYURVEDIC TEXTS

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Abstract: Keshar is one of the costliest Ayurvedic medicinal plant also known as red gold. The biological source of Keshar is dried stigma of flower *Crocus sativus* Linn. belonging to family Iridaceae, Worldwide known as Saffron. It is native of South Europe and in India its cultivation so far limited to Jammu & Kashmir. Saffron is a valuable drug used in several Ayurvedic preparations. Acharaya Charaka has classified it under shonit sthapana mahakashaya, whereas acharaya Sushrut and Bhagbhat had mentioned it under eladi gana It has katu tikta taste, Ushna virya, Katu vipaka and snigdha guna and having properties like Vatahara, Varnya, Vishaghna, Sleshmahara, Rasayana, Jantuhara. It is used in diseases like Chardi, Kasa, Vyanga, Drshti Roga, Kantha Roga, Sidhma, Suryavartta, Shiroroga. A detailed review was done, for its synonyms, classification, pharmacological properties and different features according to its type, from the major Ayurvedic classical texts and nighantus (Ayurvedic materia medica).

Keywords: Keshar, *Crocus sativus*, Pharmacological properties, Synonyms, Classification

Introduction:

Nature has gifted mankind with tremendous medicinal plants to create a disease free and healthy life. Mostly used one amongst them is Keshar, which is an important medicinal herb in Ayurveda and Unani systems of medicine. Keshar is one of the costliest Ayurvedic medicinal plant also known as red gold. The biological source of Keshar is dried stigma of flower *Crocus sativus* Linn. belonging to family Iridaceae, Worldwide known as Saffron. Though it is used in many diseased conditions but it is also enormously used as a tonic to restore the lost body's energy and vigor.

It is native of South Europe and in India its cultivation so far limited to Jammu & Kashmir. Saffron is a valuable drug used in several Ayurvedic preparations. It is imported mostly from Spain to meet the requirement, as the production obtained from Kashmir is inadequate. In order to explore the possibility of growing this highly priced plant in U.K. hills, the Central Council for Research in Ayurveda & Siddha started experimental trials related to its propagation, multiplication, acclimatization and cultivation at the garden of Indian Institute of Ayurveda for Drug Research, Ranikhet in 1971. Saffron has two active ingredients as crocin and safranal. Medicinally, Saffron has a long history as a part of traditional healing. It is also a sophisticated food colouring agent.

Approach to Systematic Classical Review

A detailed review was done from the major Ayurvedic classical texts and nighantus (Ayurvedic materia medica). Laghu trayai texts Charak samhita, Sushrut samhita and Ashtanga Hridaya were reviewed for all the pharmacological references. Eight major nighantus i.e. Dhanvantari nighantu (D.N.), Bhavaprakasha Nighantu (B.P.N.), Madanpal Nighantu (M.P.N.), Kaiyadeva Nighantu (K.N), Shodhala Nighantu (S.N.), Raj Nighantu (R.N.), Shaligram nighantu (S.G.N.) and Priya Nighantu (P.N.) were reviewed for its synonyms, classification, pharmacological properties and different features according to its type.

Botanical description:

It is herbaceous, perennial plant with height 6 to 10 inch. Leaves are radicle, linear, tunnel shaped surrounded by sheath. Flowers are violet, autumnal appearing with the leaves. Throat of perianth, bearded, anthers yellow solitary or with 2 or 3 flowers, having fine essence and brown in colour. Perianth funnel shaped tube like and hairs found in throat region. Styles of stigma extorted outside, orange in colour, apex divided into many. Style 1 cm. in length and elongated. Stigma generally 3 in numbers 2.5-3 cm. long, thread like and red in colour. Stigmas are actually known as saffron which are practically thread like. Fruits are rectangular in shape, ovary trilobular three chambered in which round seeds found. Corm devoid of stem; sheaths of corm closely reticulate, basal spathe embracing the scape 2 valved. Flowering and fruiting time is from October to November.

Geographical Distribution:

It is native of south Europe and grows wild in Greece, Asia Minor and Persia. It is cultivated in Iran, Spain, France, Italy Greece, China and Turkey. In India it is largely cultivated in Kashmir (Pampore, Srinagar) and Jammu (Kishtawar). It has been successfully cultivated in non-habitat area like Ranikhet in Uttaranchal.

Pharmacognosy:**Macroscopic Characters:**

Style and stigma are 20-25 mm. long (Stigma) and style about 10-13 mm. long in length. Stigma is flat-tubular thread like structure, having dentate rim. Upper end is broad narrowed at the base where it joints the style forming a hollow tube; it is soft and brittle in Texture, Colour reddish-brown with some yellowish pieces of tops of styles; it has strong peculiar aroma and having bitter taste. Attached styles are yellowish-brown to yellowish-orange in colour and are more or less cylindrical.

Microscopic Examinations:

Stigma composed mostly of elongated, thin-walled, parenchyma cell containing colouring matter, at the upper end numerous cylindrical papillae or trichomes up to 150 microns long present; pollen grains, a few, spherical, nearly smooth, from 40 to 120 microns in diameter; occasionally germinated and exhibiting pollen tubes.¹

Synonyms

While reviewing seven nighantus total 46 synonyms found and contribution of all the nighantus are given in following table.

Table no 1: contribution of different nighantus

S.No.	Synonyms	D.N.	B.P.N.	M.P.N.	K.N.	S.N.	R.N.	S.G. N
1.	Kumkum	+	+	+	+	+	+	+
2.	Ghusrina	-	+	-	-	+	+	-
3.	Rakta	+	+	-	+	-	+	-
4.	Kashmir	+	+	+	+	+	+	-
5.	Pitak	+	+	-	+	-	+	-
6.	Vara	+	+	+	+	+	+	-
7.	Sankocha	+	+	+	+	+	+	+
8.	Pishuna	+	+	+	+	+	+	-
9.	Dheera	-	+	-	-	-	-	-
10.	Balhika	+	+	+	+	+	+	-
11.	Shonitabha	-	+	-	-	-	-	+
12.	Rudhir	+	-	-	-	+	+	-
13.	Assriga	+	-	-	-	-	-	-
14.	Ashra	+	-	-	-	-	-	-
15.	Charu	+	-	+	+	-	-	-
16.	Agnisekhar	-	-	-	-	-	+	-
17.	Asrika	-	-	-	-	-	+	-

18.	Kashmiraj	-	-	-	-	-	+	+
19.	Shath	-	-	-	-	-	+	-
20.	Shonita	-	-	-	-	-	+	-
21.	Varenya	-	-	-	-	-	+	-
22.	Arun	-	-	-	-	-	+	-
23.	Kaleyak	-	-	-	-	-	+	-
24.	Jaguda	-	-	-	-	-	+	-
25.	Kanta	-	-	-	-	-	+	-
26.	Vahniskha	-	-	-	-	-	+	-
27.	Keshar-var	-	-	-	-	-	+	-
28.	Gour	-	-	-	-	-	+	-
29.	Varnya	-	-	+	+	-	-	-
30.	Agnisikha	-	-	+	+	+	-	-
31.	Abhraha	-	-	+	-	-	-	-
32.	Anshuka	-	-	+	-	-	-	-
33.	Shaka	-	-	-	+	-	-	-
34.	Pita	-	-	-	-	+	-	-
35.	Kukkutahyayam	-	-	-	-	+	-	-
36.	Pitkesharaka	-	-	-	-	+	-	-
37.	Malya	-	-	-	-	+	-	-
38.	Har	-	-	-	-	+	-	-
39.	Kashmirjat	-	-	-	-	+	-	-
40.	Kaleya	-	-	-	-	+	-	-
41.	Tivra	-	-	-	-	+	-	-
42.	Kusumodbhava	-	-	-	-	+	-	-
43.	Shonitahyaya	-	-	-	-	-	-	+
44.	Kusumatmaka	-	-	-	-	-	-	+
45.	Preetana	-	-	-	-	-	-	+
46.	Raktachandan	-	-	-	-	-	-	+

Classification of Keshar According To Ayurvedic Literature:

Keshar is a Karya dravya with chetanta and it is an audbhid aushadha (Medicinal) dravya. Acharaya Charaka has classified it under shonit sthapana mahakashaya by name rudhir, chakrapani in his commentary explained rudhir as kumkum and kumkum is the synonym to keshar.² Acharaya Sushrut³ and Bhagbhat⁴ had mentioned it under eladi gana by name kumkum. Among nighantus Dhanwantari nighantu⁵, Raja nighantu⁶ and Shodhala nighantu⁷ classified it under chandanadi varga. It is mentioned under karpuradi varga in Bhavaprakasha nighantu⁸, Madanpal nighantu⁹. Whereas Kaiyadeva Nighantu¹⁰ and Priya nighantu¹¹ it is mentioned under aushadhi varga and shatpushpadi varga respectively.

Pharmacodynamic Properties of Keshar in Nighantus:

Keshar is a herb used in traditional Indian medicine from thousands of years. According to API it has katu tikta taste, Ushna virya, Katu vipaka and snigdha guna and having properties like Vatahara, Varnya, Vishaghna, Sleshmahara, Rasayana, Jantuhara. It is used in diseases like Chardi, Kasa, Vyanga, Drshti Roga, Kantha Roga, Sidhma, Suryavartta, Shiroroga¹. Modern medicine has also discovered Saffron as anti carcinogenic, immunomodulatory and antioxidant like properties. Saffron has been shown to have antidepressant effect. As per the study, it is found that Saffron is helpful in macular degeneration and retinitis pigmentosa. Pharmacological properties and action according to different nighantus are given in following table.

Table no 2 pharmacodynamic properties according to different nighantus.

Text	Rasa	Guna	Virya	Vipaka	Karma (Action and Indications)
Dhanvantari Nighantu ⁵ .	Katu, Tikta.	-	Ushna.	-	Kapha Vataghna, Vrana, Drishti-Shiroroga, Visha, kayakanti (Improves skin complexion).
Bhavaprakasha Nighantu ⁸ .	Katu, Tikta.	Snigdha	-	-	Shiroroga, Vrana, Krimighna, Varnya, chardi, Vyanga, Tridosahara.
Madanpal Nighantu ⁹ .	Katu.	-	Ushna.	-	Sidhma, Shiroroga, Vrana, Krimighna, Hasyakara, Balya, Vyanga, Tridosahara.
Kaiyadeva Nighantu ¹⁰ .	Katu, Tikta.	-	-	-	Varnya, Vranashodhana, Tridosahara, Hikka, Shiroroga, Krimighna.
Shodhal Nighantu ⁷ .	-	-	Ushna.	-	Vatahara, Varnya, tvak dosha hara.
Raj Nighantu ⁶ .	Tikta, Katu.	-	Ushna.	-	Kasa, Vata-Kaphaghna, Kantha ruja, Murdhvashula, Visha, Rochana, Tanukanti krit (Promots Skin Complexation).
Priya Nighantu ¹¹ .	Tikta.	-	Anushna.	-	Vajikaran, Varnya, Tvaka dosha.

Types of Keshar:

In Bhavaprakasha Nighantu, Bhavamishra describes three types of Keshar, based on its origin, in Karpuradi Varga, as *Kashmirdeshaja*, *Balhikadeshaja* & *Parasik*⁸. The description of these are given as below

Table no 3 Types and features of keshar as per Bhavaprakash nighantu

S.No.	Types	Features			
		Odour	Colour	Size	Quality
1.	Kashmiradeshaja	Padmagandhi	Aarakta	Sukshma	Uttam (Highest)
2.	Balhikadeshaja	Ketakigandhi	Pandura	Sukshma	Madhyam (Intermediate)
3.	Parsik	Madhugandhi	Eshadapandura	Sthula	Adham (Lowest)

In Kaideva nighantu, Kaideva also describes Keshar is of three types based on its origin with similar characteristics as that were described in bhavaprakash nighantu. The only difference is the quality of Kumkum, he had the opinion that the intermediate quality comes from parsik origin and highest quality kumkum is of Kashmir origin. Whereas Balhikadeshaja originated Kumkum is of lowest quality¹⁰.

Classical references:

Vedic period:

In Atharva Parishista, Vishnu dharmasutra, Sankhyalikhita dharmasutra this drug is mentioned as a Anulepanartha dravya (External application) under the name of "Kumkum". (A.P.- 52/2/2; 50/6/4), (Vi.dh.- 75/11), (S.l.d.- 128/182; 66/2)¹².

Classification Of Kumkum According To Brihatrayis :**Charaka Samhita :**

In Charaka Samhita Keshar has been described in Shonitsthapana Mahakashaya (Rudhira). In Charak total 8 preparations of Keshar with their indication in various diseases are described

Table no 4 References of keshar from Charak samhita

S.No.	Formulation	Indication	References
1.	Shonitsthapana Mahakashaya. (Rudhira)	Shonitsthapana.	C.S.Su. 4/46
2.	Mrutasanjivani Agada.	Visha.	C.S.Chi.23/54
3.	Mahagandhahasti Agaada.	Visha.	C.S.Chi.23/77
4.	Nasya/Anjana/Lepa.	Visha.	C.S.Chi.23/189
5.	Churna.	Ashmari, Sharkara, Mutrakrichha.	C.S.Chi.26/52
6.	Bala Taila.	Vata Vyadhi.	C.S.Chi.28/152
7.	Amritadya Taila.	Vata Vyadhi.	C.S.Chi.28/162
8.	Mahapadma Taila.	Vatarakta.	C.S.Chi.29/113

Sushruta Samhita:

In Sushruta samhita Keshar has been described in Eladi gana. In Sushrut total 11 preparations of Keshar with their indication are described.

Table no 5 References of keshar from Sushruta samhita

S.No.	Formulation	Indication	References
1.	Eladi Gana.	Visha, Vata-Kaphaja Vyadhi, Varnaprasadana.	S.S.Su.38/25
2.	Pushpa-Guna.	Vata Kaphahara, Visha.	S.S.Su.46/287
3.		Vatahara.	S.S.Chi.4/24
4.	Mahasugandhi Agada.	Visha.	S.S.K.6/22
5.	Lepa.	Visha.	S.S.K.7/33
6.	Agada.	Shatapada Dansha Chikitsa.	S.S.K.8/49
7.	Chandanadi Anjana.	Netra Roga.	S.S.U.12/13
8.	Triphaladi Ghrita.	Jwara.	S.S.U.39/244
9.	Lepa.	Jwara.	S.S.U.39/278
10.	Kashaya.	Mutraja Udavrtta.	S.S.U.55/25
11.	Kalka.	Mutrakrichha.	S.S.U.58/31

Ashtanga Hridaya:

In Ashtanga Hridaya Keshar has been described in Eladi Gana. In this text total 19 preparation of Keshar with their indication in various diseases are described.

Table no 6 References of keshar from Ashtanga Hridaya

S.No.	Formulation	Indication	References
1.	Lepa	Hemanta Ritucharya.	A.H.Su.3/11,15
2.	Lepa.	Vasanta Ritucharya.	A.H.Su.3/20
3.	Eladi Gana.	Visha, Vata, KaphajaVyadhi.	A.H.Su.15/43
4.	Mridu Dhuma Dravya,	Dhumpana.	A.H.Su.21/15
5.	Lepa.	Jwara.	A.H.Chi.1/137
6.	Lepa.	Vataja Madatyaya.	A.H.Chi.7/18
7.	Churna.	Mutraghata.	A.H.Chi.11/7
8.	Bala Taila.	Vata Vyadhi.	A.H.Chi.21/77
9.	Bhutarao Ghrita.	Graham Chikitsa.	A.H.U.5/19
10.	Anajana.	Netra Roga.	A.H.U.11/12
11.	Mansyadi anjana.	Timira Roga.	A.H.U.13/23
12.	Anjana.	Timira Roga.	A.H.U.13/82
13.	Khadiradi Taila.	Mukha roga.	A.H.U.22/84
14.	Nasya.	Vataja Shiroroga.	A.H.U.24/7
15.	Gandha Taila.	Bhagna.	A.H.U.27/38
16.	Kumkumadi Lepa.	Nilika, Palita, Vyanga.	A.H.U.32/27
17.	Chandrodaya Agada.	Visha.	A.H.U.35/25
18.	Mandara Agada.	Luta Visha, Kita Visha.	A.H.U.37/74
19.	Lepa.	Mushika Visha.	A.H.U.38/17

Discussion:

Most of the nighantu writers described that Keshar is having katu tikta rasa but in Madanpal nighantu it is described as having katu rasa only where as in Priya nighantu explained keshar as having tikta rasa. As per P.V. Sharma in Priya nighantu, Keshar is having Anushna virya where as rest of the writers believed that it is having ushna virya. In bhavaprakash and kaideva nighantu, based on the origin, keshar is of three types and the best quality keshar comes from Kashmir. In Vedas it is only used in external preparations where as in laghu trayi texts it is used in internal as well as in external preparations. Total 38 references were found in laghu trayi texts out of this most number of references i.e. 19 were found in Ashtanga hridaya, 11 found in Sushrut samhita and 8 found in Charak samhita. In Charak samhita keshar is used in visha roga 3 references followed by vata vyadhi 2 references. In Sushrut samhita it is used in visha roga having 4 references followed by mutra roga and jwara, each having 2 references. In Ashtanga hridaya it has 4 references of its use in visha roga, followed by 3 references in netra roga.

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