



ORIGINAL RESEARCH PAPER

Ayurveda

KUSUMBHA (*CARTHAMUS TINCTORIUS*- LINN) AS FOOD & MEDICINE: A COMPREHENSIVE REVIEW.

KEY WORDS: *Kusumbha*, *Carthamus tinctorius* -Linn, Dietary substance, medicinal value, etc.

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ABSTRACT

Kusumbha(Safflower) scientifically known as *Carthamus tinctorius*-Linn belonging to the family Asteraceae. Mostly it is cultivated in many parts of the world for its seeds, seed oil, birdseed & carthamin dye from flowers which is used for colouring food as a substitute of a saffron & dying clothes. It has become an increasing important crop, due to its rich content & high nutritional value of its edible oil. Apart from dietary substance it has medicinal value; but practically its use as a medicine in treatment is still limited. Present study was aimed to find out the ancient nutritive & therapeutic uses of the plant Kusumbha in various Ayurvedic literature.

INTRODUCTION:

Kusumbha scientifically known as *Carthamus tinctorius*-Linn & in English Safflower belonging to the family Asteraceae. Mostly it is cultivated in many parts of the world for its seeds, seed oil, birdseed & carthamin dye from flowers which is used for colouring food as a substitute of a saffron & dying clothes. In India its tender leaves has been used as leafy vegetables.

It has become an increasing important crop in some parts of the world including India, Turkey, Eran, etc. due to its rich content & high nutritional value of its edible oil. Earlier study shows that Safflower oil has highest content of linoleic acid than in any known oil. Therefore it is considered to be a very good cooking medium for patients having hypertension & heart ailments. But recent study shows that Safflower contain higher percentage of Omega-6 fatty acid than Omega-3 fatty acids. Omega-6 fatty acids are pro-thrombotic, pro-inflammatory & tumour growth promoting; while Omega-3 fatty acids are anti-thrombotic. In ideal edible oil, the proportion of Omega-6 & Omega-3 is 4:1. But Safflower contains higher percentage of Omega-6. Therefore Safflower oil is not good for health. Ancient classical literature Charak & Susruta samhita also mentioned that it is most unwholesome article in the diet.

It is used to cure menstrual problems, diabetes, dysuria, post partum haemorrhage osteoporosis, whooping cough, rheumatism & sciatica. etc. & has proved importance as antioxidant, anticoagulant, purgative, analgesic, anti-inflammatory, antipyretic, antimicrobial, antihypertensive, & antidiabetic.

In spite of medicinal uses the oil is used mainly as cooking oil, for illuminating purposes & for soap manufactures. It possesses good dyeing properties & is used in paints, dyeing & rubber industries. As the oil is rich in polyunsaturated fatty acid, it is added to 'Vanaspati Ghee' at 5% level to maintain desired level of ununsaturation.

Apart from dietary substance it has medicinal value; but practically its use as a medicine in treatment is still limited. Present study was aimed to find out the ancient nutritive & therapeutic uses of the plant Kusumbha in various Ayurvedic literature.

REVIEW:

a) VEDIC ERA :

The word Kusumbha is found in Atharvaveda but it is not described as plant. Kusumbha is mentioned as, 'Maharanjana' means cloth dyer. Flowers of Kusumbha contain colour which

dyes the clothes. The word, 'Maharanjana' is mentioned in Bruhataranyakaupanishada (2/3/6), Vishanudharmasutra (90/91) & in Paniniya Vartika (4/2/2).

Kusumbha is also mentioned as cloth dyer in Shankhayana Guhyasutra, (1/11/2), Shankhalikhita Dharmasutra (1821), Apastambha Dhamasutra, (1/7/20/12), Vishanu Dharmasutra (79/17) & by Kalidasa.

b) SAMHITA PERIOD:

CHARAKA SAMHITA:- Charaka has described Kusumbha as Aahariyadravya in the chapter "Annapanvidhi" of Sutrasthana in Aaharopayogi Varga, Shaka varga, & Kutheraka. Charaka has quoted properties of Kusumbha oil is Ushna, Katu, Guru, Vidahi & Tridoshakara. In Shakavarga' Charak described Kusumbha leaves are Ruksha, Amla, Ushna, allivates Kapha, & agraviates Pitta. According to Charaka Kusumbha oil is one of the etiological factors in the formation of Kusstha & most unwholesome article in the diet. In Chikitsasthana Kusumbha seeds are used in the treatment of calculus, gravels & all sort of dysuria.

SUSRUTA SAMHITA : Kusumbha find its place in Susruta Samhita again in Dravyadravidhi chapter in, Tailvarga, Shimbivarga & Shakvarga. The pharmacological properties of Kusumbha seeds are Katu Rasa & Vipaka, reduces the deranged Kapha & it is extremely unwholesome. Susruta quoted that Kusumbha oil is Madhura, Katu, Guru, Ushna, Balya, Chakshusya, Virecaka & used in Prameha, & properties of Kusumbha leaves & Flower oil are also mentioned.

ASHTANGA HARUDAYA: The pharmacological properties of Kusumbha oil are hot in potency, produce diseases of skin, and aggravate Kapha & Pitta. Vagbhata also describes the properties of Kusumbha seed & leaves in Shimbidhanya varga & Shaka varga.

ASHTANGA SANGRAHA: In Astanga sangraha, Kusumbha find its place in Tailavarga, Shakavarga & Shiimbidhanya varga. Vagbhata described that among all the oils Kusumbha oil is extremely unwholesome oil & it is Ushna, Kaphapittakar & produces skin diseases. In Mutraghata Chikitsa chapter, Kusumbha oil is advised in Mutraghata & Mutrahmari.

CHAKRADATTA : Chakradatta which serves as the faithful guide for Ayurvedic practitioner & research workers, Kusumbha is mentioned in 'Yonivyapada chikitsa for Lomashatana. Also the specific formula, 'Bhumilatapakwa Kusumbha oil' is mentioned for Drudhalingama & Viryastambhana in 'Vrushyadhikara chapter.

YOGRATNAKARA : Yogratanakara which is minor image of Carak Samhita describes Kusumbha in Tailaguna & Dhanyadiphalashakaguna. The pharmacological properties of Kusumbha are same as described in Charaka Samhita..

BHAISHAJYARATNAVALI : Kusumbha oil is advised for Lomashatana action in Chikitsa chapter of Bhaishajyaratnavali.

NIGHANTU PERIOD : Nighantus, the science of herbs, provides the evidence of systematic & scientific understanding of drugs & it is explained with their synonyms, Rasa panchak & their utility in different diseases. Properties & actions of seeds, seed oil, flowers & leafs are different. Similarly, the description regarding indication of Kusumbha as food, medicine have explained by its synonyms, pharmacological activities. Thus they reviews from various nighantus & given in following tables.

ETYMOLOGICAL DERIVATION OF SYNONYMS:

- 1) **Vanhiashikha** - During flowering season apex of plants looks like fire.
- 2) **Peetamalaktam** - Kusumbha has red & yellow coloured Flowers.
- 4) **Rakta** - Kusumbha has red (rakta varna) coloured flowers.
- 5) **Lohita** - Kusumbha has red (lohitvarna) coloured

flowers.

- 6) **Gramyakumkuma** - Kusumbha flowers are used as substitutes or adultrant for saffron in villages.
- 7) **Ranjana dravya** - Kusumbha flowers has dyeing property.
- 8) **Vastraranjaka** - Kusumbha flowers are commonly used for dying clothes.
- 9) **Vastraranjani** - Kusumbha flowers are commnley used for dying clothes.
- 10) **Peeta** - Kusumbha has yellow coloured flowers.
- 11) **Alkta** - Kusumbha has red (Blood) coloured flowers.
- 12) **Kamalotturama** - Kusumbha has saffron coloured flowers.
- 13) **Maharanjanama** - Flowers commonly used for dying clothes.
- 15) **Kantaki** - Kusumbha has spiny leaves & Fruits.

MORPHOLOGY BASED ON SYNONYMS:

Nighantu mentioned the various synonyms to plants which are based on their location, morphological character, action properties, etc. Most of the synonyms of Kusumbha shows the red & yellow colour of their flower e.g. Alkta, Vanhishikha, etc. Vastraranjaka, Maharanjanama, etc . indicates their dying properties. Kantaki shows it has spiny leaves & fruits

TABLE NO. 1 PHARMACODYNAMICS (RASAPANCHAKA) OF KUSUMBHA SEED

Sr. No.	Action	C.S.	S.S.	A.S.	A.H.	B.N.	D.N.	K.N.	M.N.	R.N.	P.N.	N.R.	Sh.N.
A	Rasapanchaka												
1	Rasa-Madhura			√	√						√	√	√
	Amla	√				√							
	Katu							√					
	Tikta			√	√								
	Kashaya		√								√	√	√
2	Vipaka Katu		√	√	√		√						
	Virya -Ushna	√	√	√	√	√	√						
	Sheeta										√	√	√
4	Guna												
	Guru			√	√						√	√	√
	Tikshna												
	Snigdha			√	√						√	√	√
	Ruksha	√					√						
	Vidahi		√					√					
5	Action on Dosha												
	Vatashamaka											√	√
	Pittashamaka										√		
	Kaphashamaka		√					√	√		√	√	√
	Vatavardhaka						√		√		√		
	Pittavardhaka			√	√								
	Kaphavardha			√	√		√						
6	Action on Dhatu												
	Shukra (Avrushya)			√	√						√	√	
7	Action on Mala												
	Mala						√						
	Virechaka						√						
	Mutra Virechaka						√						
8	Action as/on												
	Balya						√						
	Achakshushya			√	√						√		
	Raktapittanashaka						√		√			√	√
	Apathyakara		√										
	Artavajanana						√						
	Vranaropaka						√						
	Vishanashaka								√				

Majority of text mentioned that Kusumbha seeds are Guru, Snigdha, Madhura, Kashaya, Ushna, Katu vipaki & alleviates Kapha & aggravated Vata. Majority of the authors described as it as Raktapittanashaka, Shukrashamaka & Achakshushya. Shaligram, Priya nighantu & Nighantu Ratnakara quoted that it alleviates Vata & Kapha. According to Dhanvantari nighantu Kusumbha seeds are Balya, Vranaropaka, Mala-Mutra virechaka & used in Dysmenorrhea.

TABLE NO. 2 PHARMACODYNAMICS (RASAPANCHAKA) OF KUSUMBHA OIL

Sr. No.	Action	Ch	Su	A. S.	A.H.	B.N.	D.N.	K.N	M.N.	R.N.	P.N.	N.R.	Sh.N.
A	Rasapanchaka												
	Rasa- Amla					√						√	
	Lavana							√				√	
	Katu		√						√			√	
2	Vipaka - Katu	√	√				√	√	√			√	
3	Virya- Ushna	√	√	√	√	√	√	√	√			√	
4	Guna												
	Laghu		√										
	Guru	√				√	√	√	√				√
	Tikshna		√					√	√				√
	Ruksha												
	Vidahi	√	√			√	√	√					√
5	Action on Dosha												
	Vatashamaka							√	√				
	Pittashamaka							√					
	Kaphashamaka							√					
	Vatavardhaka	√	√				√			√			√
	Pittavardhaka	√	√	√	√		√		√	√			√
	Kaphavardhaka	√	√	√	√	√	√		√	√			√
6	Action on Dhatu												
	Rakta dushti												√
	Vrushya												
7	Action												
	Mala Stambhaka												√
	MalaVirechaka		√							√			
	Mutra Virechaka		√										
8	Action												
	Balya					√		√	√	√			√
	Achakshushya		√			√		√	√	√			√
	Raktapittakara		√			√		√		√			√
	Krumighna		√										
	Pramehaghna		√										
	Twagadoshkrutta			√	√								
	Dahakara								√				
	Rajyaksmahara,									√			
	Netrakandukara									√			

Above description shows that majority of the text mentioned that Kusumbha oil is Guru, Tikshna, Katu, Ushna & aggravates all Doshas. Only Kaiyadeva nighantu mentioned that it has Lavan rasa & alleviates all Doshas.

Most of the authors described it is Balya, Achkshushya & Raktapittakara. Also Kusumbha oil is Laghu & Pramehghna, Krumighna according to Susruta.

TABLE NO. 3 PHARMACODYNAMICS (RASAPANCHAKA) OF KUSUMBHA LEAVES.

Sr. No.	Action	Ch	Su	A. S.	A.H.	B.N.	D.N.	K.N	M.N.	R.N.	P.N.	N.R.	Sh.N.
A	Rasapanchaka												
1	Rasa-Madhura		√					√	√			√	√
	Amla	√		√	√			√				√	
	Katu												√
2	Vipaka- Katu											√	
3	Virya- Ushna	√	√	√	√			√	√			√	√
4	Guna												
	Laghu		√						√				
	Guru	√		√	√			√					√
	Ruksha	√	√	√	√				√				√
B	Action on Dosha												
	Kaphashamaka	√	√					√	√			√	
	Pittavardhaka	√		√	√			√	√			√	
C	Action on Dhatu												
	Rasa												
	Mala Saraka	√		√	√			√				√	√
	Mutra Virechaka											√	√

Above description of Kusumbha leaves, based on Pharmacological action indicates that Kusumbha leaves have Guru & Ruksha guna, Amla & Madhura rasa & Ushna virya. Majority of authors described it as Malasaraka, alleviates Kapha & aggravates Pitta; but Susruta & Madanapala nighantu described it as Laghu. Shaligrama nighantu & Nighantu Ratnakar mentioned that it is Mutravirechaka.

TABLE NO. 4 PHARMACODYNAMICS (RASAPANCHAKA) OF KUSUMBHA FLOWERS.

Sr. No.	Action	B. N.	N. R.	Sh. N.
A	Rasapanchaka			
1	Rasa - Madhura		√	√
2	Vipaka - Katu			
3	Virya -Ushna		√	√
4	Guna - Laghu		√	√
	Tikshna			√
	Ruksha		√	√
5. Action on Dosha	Kaphashamaka	√	√	√
	Vatashamaka		√	√

	Vatavardhaka	√		
	Pittavardhaka		√	√
Action as/on	Raktapittanashaka	√		
	Kesharanjaka		√	√
	Bhedaka		√	

In above data Shaligrama nighantu & Nighantu Ratnakara mentioned that Kusumbha flowers have Madhura rasa, Ushna virya & Laghu, Ruksha, Tikshna guna & alleviates Kapha-Vata & aggravates Pitta.

Bhvaprakasha nighantu mentioned that Kusumbha flowers alleviates Kapha, & aggravates Vata.

TABLE NO. 5 THERAPEUTIC INDICATION OF KUSUMI MBHA

SR. NO.	CLASSICS	DISEASES	FARMUATIONS;	ROUTES OF ADMINISTRATION
1	Charaka samhita	1 Mutrashmari, Mutrakruchha 2 Insect & spider poisoning	1. Eravaru seeds + Trapusha + Kusumbha + Saffron with grape juice. 2. Kusumbha flowers + Cow teeth + Suvarnakshiri + faeces of pigeon + Danti + Trivrutta & Rocksalt.	Orally Locally
2	Susruta samhita	1 Insect and Scorpion poisoning. 2 Prameha 3 Krumi 4 Shirorogahar 5 Kushtha	1. Kusumbha flowers + Manjistha + Haridra + Kodrava + Ghee. 2. Kusumbha oil	Locally (fumigation at anal region.) Orally.
3	AshtangaHrudaya	1 Insect and Spider poisoning .	1. Kusumbha flowers + Cow teeth + Suvarnakshiri + faeces of pigeon + Danti + Trivrutta & Rocksalt.	Locally
4	Ashtanga Sangraha.	1 Mutraghata 2 Pittashmari	1. Eravaruseeds + Trapusha + Kusumbha + Saffron with grape juice 2. Medicated ghee prepared from Veerataru + Gundra Etkata + Varahi + Patha + Patala + Shirisha + Shalimula + Vidari . + Punarnava + Trapusha + Kusumbha + Aravaruka + Karkaru seeds + Mdhuka + Shilajatu	Orally. Orally
5	Chakradatta	1 Nirlomakarnarthama. 2. Linga drudhikarnarta.	1. Kusumbha oil 2. Medicated oil prepared from Kusumbha oil & Bhumilata powder.	Locally. Locally.
6	Bhaishgyaratnavali	1. Nirlomakarnarthama.	1. Kusumbha oil.	Locally.
7	Vanaushadhi Chandrodaya.	1 Vrukashmari. 2. Romantika. 3 Kamala 4 Arsha 5 Unamada	1. Kusumbha flower paste + sugar - 1 week. 2. Kusumbha flowers + Madayantika leaves - paste applied on palm & sole. 1. Kusumbha flower powder. 1. Kusumbha paste + curd 1. Kusumbha seeds + milk + sugar + water.	Orally. Locally. Orally. Orally. Orally

DISCUSSION -

Review of Literature reveals that almost all classical text mentioned Safflower as a dietary substance (Aahariya dravya) & included in Tailvarga, Shakavarga, Dhanyavarga etc.; but Charaka & Susruta mentioned that it is most unwholesome article in the diet. It has been used since Vedic era but apart from food substances, it has been used for dyeing purpose. Almost all classical text has mentioned different properties of Safflower seed, oil, leaves & flowers. According to most of the text Safflower seeds are Madhura, Kashaya, Katu, Guru, Snigdha, Ushna & Aggravates Pitta & Kapha. Safflower Oil is Raktapittakar while seeds are Raktapittanashaka, Mutrakruchanashaka, Balya, etc.

Almost all text mentioned that Safflower oil is Katu, Ushna, Guru, Tikshna, Vidahi & aggravates all Doshas; but Kaideva nighantu described it has Lavana Rasa & alleviates all Doshas. Chakradatta & Bhaishyajaratnavali mentioned use of Safflower oil for Lomashatana in Yonivyapada & Kshudrarog chikitsa respectively. In addition to Lomashatana action above cited text also explain the use of Safflower oil in Prameha, Mutrakruchha, Vrana, Kandu, etc.

According to all text Safflower leaves are Madhura, Amla,

Ushna, Guru, Ruksha & Pittavardhaka & Malasaraka. S. flowers aggravates Pitta, Vata & used in Dysmennorrhia, Fever, etc & for dyeing properties.

From the references of research work done, many biological activities of Safflower oil have been screened. e.g. Anticholesterol activity, Antitumour & antimicrobial activity, etc. Study shows that it is externally used in Kandu, Vrana, Garbhashaya shotha & Sandhivata & internally in Kamala Pratishaya, Mutraghata, etc.

CONCLUSION:

Kusumba is mostly cultivated for its edible oil, as birdseed & also for carthamin dye from flowers. Ancient Ayurvedic literature mentioned that it is most unwholesome article in the diet. Its extract & oil has many therapeutic uses & having great pharmacological importance. It is used to cure menstrual problems, diabetes, dysuria, post partum haemorrhage, osteoporosis, whooping cough, rheumatism & sciatica. etc. & has proved importance as antioxidant, anticoagulant, purgative, analgesic, anti-inflammatory, antipyretic, antimicrobial, antihypertensive, & antidiabetic. Though apart from dietary substance it has medicinal value; but practically its use as a medicine in treatment is still limited. So there is

huge scope for further advance scientific research on its various ancient therapeutic aspects.

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