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A review on Kushmanda (Benincasa Hispida) with special reference to Visha Chikitsa

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Abstract
Kushmanda or Benincasa hispida belonging to Cucurbitaceae family is a medicinal plant used in *Ayurveda* from ancient times to treat variety of disorders. It is cultivated throughout India in plains and hills. It is a common vegetable crop among Indian community and is well known for both its nutritional and medicinal properties. Even though it is mostly used *mutravikaras* and *manasikavikaras*, it has also got utility in *visha chikitsa*. Here an attempt is carried out to explore the *vishaghna* action of *Kushmanda.*

Keywords: Kushmanda, Visha Chikitsa, Ayurveda

Introduction
In *Ayurvedic* literature, information regarding benefits and properties of herbs are widely described. These medicinal plants are considered as a rich resource of ingredients which can be used in drug development. Apart from that, these plants play a critical role in the development of human cultures around the whole world. Moreover, some plants are considered as important source of nutrition and as a result of that they are recommended for their therapeutic values.
Kushmanda (Benincasahispida) is an important medicinal plant which is well known for its medicinal as well as nutritional properties. Brhat Trayi have described it under *phalavarga* and its usage is limited. It is mainly useful in *Mutravikaras* and *Apasmara*. All the *Nighantus* quoted it extensively. *Dhanwantari nighantu* mentions it as best among *valliphala. Kaiyadeva nighantu* described the properties of unripen fruits, ripen fruits, juice, pulp and leaves separately.

Materials and Methods
This review has done with an intention to provide an overview on Pharmacological activities and *vishaghna* property of *Kushmanda.* The data were collected from *Ayurvedic* authentic texts, scientific journals and through electronic media.

Taxonomical Classification
Kingdom:	Plantae
Clade:	Angiosperms
Clade:	Eudicots
Clade:	Rosids
Order:	Cucurbitales
Family:	Cucurbitaceae
Subfamily:	Cucurbitoideae
Tribe:	Benincaseae
Genus:	BenincasaSavi
Species:	Benincasahispida

Vernacular Names
Sanskrit:	Kushmanda
English:	Ash gourd
Hindi:	Petha
Kannada:	Budhikumbala
Malayalam:	kumbalam
Tamil:	Pusanikkai

Morphology [1]

- A large trailing gourd climbing by means of tendrils; hispid beneath
- Flowers yellow, unisexual, male peduncle 7.5- 10cm long, female peduncle shorter;
- Fruits broadly cylindrical, 30-45cm long, hairy throughout, ultimately covered with a waxy bloom.

Chemical Constituents [2].

The major constituents of Benincasa hispida fruits were volatile oils, flavonoids, glycosides, sacchrides, proteins, carotenes, vitamins, minerals, ß-sitosterin and uronic acid

Synonyms

Table 1: Synonyms according to Nighantus

Sl.no.	Synonyms	*B.P* [3]	*D. Ni* [4]	*K. Ni.* [5]	*R. Ni* [6]	*Ni. A* [7]	*So. Ni* [8]
1.	*Kushmanda*	+				+	
2.	*Pushpaphala*	+		+			
3.	*Peethapushpam*	+				+	
4.	*Brihatphalam*	+			+	+	
5.	*Kushmandika*		+				
6.	*Kumbhaphala*		+		+		+
7.	*Sthiraphala*		+	+			
8.	*Kushmandi*		+		+		
9.	*Somasrishta*		+				
10.	*Peethika*		+				
11.	*Somamritha*			+			
12.	*Mahaphala*			+			
13.	*Karkotika*				+		
14.	*Kumbhari*			+			
15.	*Somasrishtika*			+			
16	*Karkaru*					+	
17.	*Suphala*				+		
18	*Nagapushpaphala*				+		
19.	*Kushmandini*						+
20.	*Supushpaka*						+
21.	*Karkarika*						+
22.	*Phala*						+
23.	*Kushmandaki*			+			
24.	*Peethaka*			+			

Rasa Panchaka according to Nihantus

Table 2: Rasa panchaka according to Nighantus

Rasa Panchaka	*Bi.P* [3]	*K.Ni* [5]	*R. Ni* [6]	*Ni. A* [7]	*D.Ni* [4]
Rasa	*madhura, sakshara(vridha)*	*Madhura Sakshara (pakva)*		*Madhura*	
Guna	*Guru Laghu(vridha)*	*Guru, Ruksha Laghu,ushna (Pakva)*		*Laghu, Ushna*	
Virya	*Seeta (bala) Kinchitsheeta (pakva)*	*Seeta Ushna (vridha)*		*Seeta*	
Vipaka		*Madhura*		*Madhura*	
Dosha karma	*Bala- pithahara Madhya- kaphakaraka Vridha - tridoshahara*	*Vatapithahara Bala- pithahara Madhya- kaphapaha Vridha – tridoshahara*	*Pithahara*	*Bala- pithahara Madhya- kaphapaha Pakva– tridoshahara*	*Vatapithahara*
Specific karma	*Brihmanam, vrishyam, Vastisudhikaram*	*Hridya, Vrishya*	*Vrishya, balya*	*Balya, Vrishya, Brihmana*	*Vrishya, Hridya, vastishudhikara*
Rogaghnatha	*Manasikaroga*	*Jwara, ama, sopha, daha*	*Mutraghata, prameha, arochaka, ashmari*	*Mutraghata, ashmari, aruchi, unmada*	*Manasika roga,*

Pharmacological Activities

1. Anti-oxidant activity

The antioxidant activity and total phenolic content (TPC) of Benincasa hispida seeds extract were investigated using conventional Soxhlet extraction (CSE), and DPPH and ABTS scavenging activity tests. The ethanolic extract gave the highest total phenolic content 11.34±1.3 mg GAE/g and antioxidant activity followed by ethyl acetate and n-hexane extract [9].

2. Anti-inflammatory and analgesic activity

The preliminary investigations of aqueous extract of 0TBenincasa hispida showed that it 0Texhibited anti-inflammatory properties. Petroleum ether and methanolic extract of Benincasa hispida fruit, at the dose of 300 mg/kg BW, produced dose dependent and significant inhibition of carrageenan- induced paw edema, histamine induced paw edema and cotton pellet induced granuloma in rat model. In carrageenan- induced paw edema model, petroleum ether and methanolic extracts showed maximum inhibition in inflammation (0.270 ± 0.063 and 0.307 ± 0.043 respectively) as compared to control group (1.27 ± 0.059) and standard valdecoxib (0.247 ± 0.033). In histamine-induced paw oedema, both extracts showed (62.86% and 54.84% respectively) inhibition as compared to control. The effects were comparable with that of standard drug cetrizine (95.24%). Petroleum ether and methanolic extracts showed slight insignificant reduction in granuloma tissue formation in cotton pellet implanted rats [10].

3. Anti-microbial activity

The antibacterial activity of seed oil of B. hispida was tested against selected pathogens (gram positive, M. luteus, S. aureus and B. subtilis; and gram negative, E. coli, P. multocida and P. aeruginosa). Maximum mean zone of inhibition was observed against B. subtilis (16mm) and the minimum against Micrococcus luteus (11mm) P (39) P. However, the antibacterial activity of methanolic extract of Benincasahispida was studied against three gram positive bacteria Staphylococcus aureus, Staphylococcus epidermidis and Bacillus subtilis and three gram negative bacteria Escherichia coli, Pseudomonas aeruginosa and Klebsiella pneumonia, and the antifungal activity was studied against Candida albicans and Aspergillus niger. The methanolic extract of Benincasahispida showed no antibacterial activity, but it caused significant zone of inhibition against Candida albicans at the concentration of 30 mg/ml, while, it caused no inhibition against Aspergillus Niger [11].

1. Antipyretic activity- The ethanol extract of Kushmanda possess potent antipyretic effects and pharmacologically justifies its folklore use for fever and pain condition [12].

Agada Prayogas

Internal

1. Urine retention in *Mandali visha- kashaya* is prepared with stem of *kushmanda* and added with *sookshma ela choorna –pana* [13] *-kashaya* is prepared with stem of *kushmanda* and added with *trikatu choorna* [14].
2. To prevent gaping of wound caused by snake bite- *kushmanda patra* along with *chandana, satavari, kumari swarasa, eranda patra* and the parasite grown over *kupilu* are added with water *–dhara* [15].
3. Mercury poisoning- *kushmanda swarasa* along with *sita–pana [16] -krishnatulasi, kushmanda, satapushpa, nagapushpa, lavanga* and *draksha* are taken in equal quantity and made into *choorna*. To this *gandhaka* is added and mixed with milk. It is then kept in sunlight. This can be given for *pana* [16].
4. *Kodravavisha- kushmandaphala* is exposed directly to fire for few minutes, and *swarasa* is squeezed out from it. To this, *sarkara* is added and given for *pana* [17].
5. *Raktasrava* in *Mandali visha-* a *kalka* is prepared with *kushmanda beeja* and *lashuna* and given for *pana* along with *tandulodaka* [18].
6. *Dantarakta* in *Mandali visha- kushmandaphala* is cut into pieces and cooked without adding salt-given for chewing [19].
7. *Madyavisha-* juice of *kushmanda* added with powder of *sita, madhuka, trisugandha, nagapushpa, ajaji, Krishna* and *maricha* in equal quantity [20].
8. It is one among the *phalavargas* mentioned as *pathya* for persons afflicted with *visha* [21].

External

1. *Sarpavisha-Kushmandapatra, pushpa* and *moola* along with *eshwaramooli, lakshmana, vaca* and *palandu – sarvanga lepa* [22].
2. *Thookkudhara- kushmanda* is one among the ingredient in *dharadrava.* This dhara reduces burning sensation, swelling and feeling of extreme heat due to *Mandali visha* [23].

Discussion and Conclusion

Kushmanda is a medicinal plant which is well known for its medicinal as well as nutritional values. It is one of the most naturally energizing foods consumed by Indians. It is also an important ingredient in various *Ayurvedic* formulations. But its use in *visha chikitsa* is very much limited. *Keraleeya vishagranthas* have mentioned its utilities in *sthavara* and *jangama vishas. Acharya Sushruta* mentioned its use in *madyavisha*. Also, studies have proven its anti-inflammatory, analgesic, antimicrobial and antipyretic activity. Hence, we can conclude *kushmanda* as a promising drug in *visha chikitsa.*

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