

**REVIEW ARTICLE ON KUSHMAND “*BENINCASA HISPIDA* THUMB.” WITH BRIEF  
USES OF IT’S INGRIDENTS.****Dr. V. B. Washimkar\*<sup>1</sup> and Dr. M. B. Shende<sup>2</sup>**<sup>1</sup>P.G. Scholer, <sup>2</sup>Guide & Asso. Professor  
Dept. of Dravyaguna, Govt. Ayurved College, Nanded, Maharashtra 431601.**\*Correspondence for Author: Dr. V. B. Washimkar**

P.G. Scholer, Dept. of Dravyaguna, Govt. Ayurved College, Nanded, Maharashtra 431601.

Article Received on 29/06/2016

Article Revised on 19/07/2016

Article Accepted on 09/08/2016

**ABSTRACT**

Herbal medicinal plants plays an important role in the traditional system of medicines such as Ayurveda, Unani, Siddha. Because of minimal side effects and records of safty the demand of herbal medicines is increasing tremendously. *Benincasa hispida* is also the important drugs in Ayurved system of medicine, belonging to “VALLIPHALA’ VARGA” commonly called as “KUSHMAND”. Kushmand has a lot of medicinal values such as **Amlapitta, Raktapitta, Mutral, Vrishya, Deepan, Kshaya**, and mainly as **Chetovikar shaman**. Kushmand phala contains the major compounds as – **Lupeol,  $\beta$ - Sistesterol, Cucurbitine, Manitol** etc. Hence, In the present study, an attempt is made to critically review the kushmanda phala from Ayurvedic aspects and the action of its chemical constituents.

**KEYWORDS:** Kushmand, Ingridients, *Benincasa hispid*, Nirukti, Ayurvedic uses etc.**INTRODUCTION**

Plants have been one of the important source of medicines since the beginning of human cultivation. Human have used plants for medicinal purpose for centuries; because of its minimal side effects and records of safety, the demand of medicinal plants are increasing tremendously.

*Benincasa hispida* belongs to the Cucurbitaceae Family commonly called Kushmand, Winter melon or Wax guard and is used frequently in Ayurvedic system of medicine.<sup>[1]</sup> It is also called as Ash gourd, Green pumpkin, White gourd.<sup>[2]</sup> The genus name was given to it by famous Italian botanist, Gaetanon Savi, in 1818 to honour Giuseppe Benincasa, an Italian patron of botony.<sup>[2]</sup>

Kushmand is described as the best among the valli phala but is not mentioned in the vargas or gunas in the texts.<sup>[3]</sup>

Kushmand is cultivated through India including tribal village and settlements and on the hills up to 1200 m altitude, as a vegetable.<sup>[3,2]</sup>

Kushmand, the best vigitable fruit, having pitta-vata hara doshaghata and the medicine for pitta personality (prakuti) has remarkable therapeutic values in pitta ailments, epilepsy, bleeding & insanity.<sup>[1]</sup>

According to Rajnighantukar the Dravyaguna is not only in among the Astanga but also is kept at first positions, so details study of dravya is of so important.<sup>[4]</sup>

**AIMS AND OBJECTIVES**

The study is carried out with an aim to review the recent study carried out on kushmand and uses of its ingredients with ayurvedic review.

**MATERIAL AND METHODS**

This study is carried out by critical reviews. Searching various medical database like Pubmed, Google scholar, Dhara, Google Search, e- nighantu etc. and also various classic text like samhita, nighantu, gravyaguna text books etc related to kushmand.

**SCIENTIFIC CLASSIFICATION**

- Kingdom: Plantae(unranked): Angiosperms (unranked: Eudicots (unranked): Rosids
- Order: Cucurbitales
- Family: Cucurbitaceae
- Subfamily: Cucurbitoidae
- Tribe: Benincaseae
- Subtribe: Benincasinae
- Genus: *Benincasa*
- Spesies: **B. hispida**
- Binomial name: *Benincasa hispida* (Thunb.)Cong.<sup>[2]</sup>

**Nirukti**<sup>[5,6,7]</sup>

1. **कूष्माण्ड**:- 1] Though its fruit pulp has cooling effect the seeds have *ushna* guna and *pitta* vardhaka. (uÉÉÉÉ:) 2] It is shitvirya & there is no heat even in the seed.
2. **ककारु**:- Its fruit attains ash colour (white colour).
3. **पीतुष्यम्**- Its flower are yellow in colour.
4. **पुष्पफल**- The rudiment form of flower will remain at the end of fruit even after it is fully matured.
5. **बृहत फलम्**- Its fruit is very big.
6. **वल्लीफल**:- Its big fig hangs to the stem of the creeper.
7. **स्थिरफल**- Owing to the heaviness, the fruit do not move easily.
8. **सोमसूत्र** - Its Fruits are watery.
9. **वल्लीफलोत्तमम्**- It is regarded as the best among the cucurbitaceous fruit.
10. **कुम्भफल** - Pitcher like fruit.

**HABITAT**

*Benincasa hispida* is cultivated throughout India including tribal villages and settlements. A native of Java & Japan the climber is now cultivated throughout the tropical Asia.<sup>[3]</sup>

**HABIT**

A large trailing or climbing, stem stout, angular, hispid. Leaves 4-6 inch in diameter, hispid beneath. Petioles 3-4 inch long. Flowers large yellow; male peduncle 3-4 inch in diameter, female peduncle is shorter. Calyx-teeth when young often narrowing and scarcely serrate. Filaments angular hispid at the base. Fruits 1-1<sup>1/2</sup>ft. long, broadly culindric, not ribbed, hairy ultimately covered with waxy bloom. Seeds may oblong, compressed marginally.<sup>[7]</sup>

**PHYTOCHEMISTRY****1. Fruits**

Lupeol,  $\beta$ -Sitosterol & there Acetate, Cucurbitin, Rhamnose, Mannitol, Triacantenol, Alkali, Fat, Vitamins, Glucose, Adenine, Trigonelline, Histidine. **Seeds**- 24 $\gamma$ -ethylidene cholesterol- 7 enol (Avenasterol) & 24  $\beta$ - ethyl cholesterol – 7,25Cucurbita 5,24 – dienol is isolated from leaves, stems, pericarp & roots. **Roots**- Pentacuclic triterpine, bryonolic acid.<sup>(2)</sup>

**USES OF INGREDIENTS**<sup>[8]</sup>

**LUPEOL**- It has complex pharmacology, displaying antiprotozoal, antimicrobial, antiinflammatory, anti-tubercular, & chemo protective properties.

A 1998 study found lupeol to decrease paw swelling in rats by 39% compared to 35% for the standardize control compound indomethacin.

It is an effective inhibitor in laboratory models of prostate & skin Ca.

Lupeol to decrease IL-4 production by T-helper type 2 cells.

 **$\beta$ -SITOSTEROL**

It is being studied for potential to reduce benign prostatic hyperplasia (BPH) & Blood Cholesterol Level.

**CUCURBITIN**

It is an inhibitor of histidine decarboxylase, which is associated with inhibition of the biosynthesis of histamine responsible, among other things, for the formation of inflammatory response.

It is used in cosmetic for dry and sensitive skin and for the treatment of Schistosomiasis.

Cucurbitin cause degenerative changes in the reproductive organs of parasitic flatworms called flukes.

**RHAMNOSE**

High rhamnose extracts from the water have found use in antiwrinkle cream.

Rhamnose is commonly bound to other sugar in nature. It is a common glucose compound of glucosides from many plants. Rhamnose is also component of the outer cell membrane of AFB (Acid Fast Bascilli) in the mycobacterium genus which includes the organism that causes tuberculosis.

**MANNITOL**

In plants it is used to induce osmotic stress. Mannitol has several industrial uses but is mainly used to produce tablet of medicine.

Manitol is used clinically in osmotherapy to reduce raised intracranial pressure until more definite treatment can be applied.

It is also used to treat patients with oliguric renal failure. Mannitol can also be used as facilitative agents for the transportation of pharmaceutical directly into the brain.

It is commonly used in the circuit prime of heart lung machine during cardiopulmonary bypass.

It is also the 1<sup>st</sup> drug of choice for T/t of Glucoma in veterinary medicine.

It can be administered in cases of severe ciguatera poisoning, severe ciguatoxin, or "Tropical fish poisoning" can produce stroke like symptoms.

**TRIACONTANOL**

Tricontanol is a growth stimulant for many plants, most notably roses in which it rapidly increases the no of basal breaks.

**HISTIDINE**

It is an essential amino acid in humans & other mammals. It was initially thought that it was only essential for infants, but larger term studies established that it is also essential for adult human.

It is an  $\alpha$ -amino acid with an imidazole functional group. It is one of the Z<sub>3</sub> proteinogenic amino acid.

**ADENINE**

It is nucleobase with a variety of role in biochemistry including cellular respiration, in the form of both the energy rich adenocine triphosphate (ATP) & the cofactors nicotinamides adenine dinucleotide & protein synthesis as a chemical component of DNA & RNA.

**VITAMINE**

it's an organic compound and vital nutrient that an organism required in limited amounts.

“An organic chemical compound is called vitamin when the organism can't synthesise the compound in sufficient quantities and must be abstained through the diet. Hence, the term Vitamin”.

**AYURVEDIC REVIEW<sup>[17]</sup>**

सं. पर्याय=

SN	SYNONIMS	B.P. <sup>9</sup>	D.N. <sup>10</sup>	R.N. <sup>11</sup>	K.N. <sup>12</sup>	Sau.N. <sup>7</sup>	Sho.N. <sup>13</sup>	P.N. <sup>7</sup>
1	कूष्माण्ड	✓	✓		✓	✓		✓
2	कर्कारुः							
3	पीतपुष्पम्	✓						✓
4	पुष्पफल	✓			✓			✓
5	बृहत् फलम्	✓					✓	✓
6	बल्लीफलः							
7	स्थिरफल		✓		✓			
8	बल्लीफलोत्तमम्							✓
9	कुम्भफल		✓				✓	
10	सोमसुष्टा		✓					
11	महाफला				✓			
12	कुंभारी				✓			
13	कूष्माण्डिका		✓					
14	कूष्माण्ड		✓				✓	
15	पीतिका		✓		✓			
16	कूष्माण्डकी				✓			
17	सोमकापूजा				✓			
18	सोमपुष्टिका				✓			
19	धूल्यवास					✓		
20	खदिर पत्रक					✓		
21	गौर खदिर					✓		
22	खदिरकण्टक					✓		
23	कार्कोटिका						✓	
24	कुम्भाण्डी						✓	
25	सुफला						✓	
26	नागपुष्पफला						✓	

{B.P.= Bhavprakash nighantu, D.N.= dhanvantaree nighantu, R.N.= Raaj nighantu, K.N.= Kaiyadev nighantu, Sau.N.= Saushrut nighantu, Sh.N.= Shodhal nighantu, P.N.= Priya nighantu}.

Vitamin have diverse biochemical functions.

**GLUCOSE**

The name Glucose comes from Greek word-meaning 'Sweet Sugar'.

Glucose is stored as polymer, in plant as starch and in animal as glucogen.

Glucose is a ubiquitous fuel in Biology. It is used as an energy source in most organisms, from bacteria to human, through either aerobic respiration, producing about 3.75 kcal(16kj) of food energy per gram.

Glucose supplies almost all energy for the brain, so its availability influences psychological processes. When glucose is low psychological processes requiring mental effort.

PROPERTIES OF KUSHMAND<sup>[2]</sup>

S.N.	PROPERTIES	C.S. <sup>[14]</sup>	S.S. <sup>[15]</sup>	A.H. <sup>[16]</sup>
1	VARGA	Shaka	Shaka	Shaka
2	RASA	<b>Pakwa:-</b> Madhur, Amla.	Madhur.	Madhur
3	GUNA	<b>Pakwa:-</b> Laghu, Ksharyukta.	<b>Pakwa:-</b> Laghu, Ushna.	Guru
4	VIRYA	-		-
5	VIPAKA	-	Madhur.	Madhur
6	DOSHAGNATA	<b>Pakwa:-</b> Sarvadosh nirbahanam	<b>Bal:</b> Pittaghna. <b>Madhya:</b> Kaphavaha. <b>Pakva:</b> Sarvadoshara.	<b>Bal:</b> - <b>Madhya:</b> Kaphavatakrita. <b>Pakva:</b> Vata-pittajit.
7	ACTIONS	Shrutha mutra-purish	<b>Pakva:</b> Dipana, Bastishodhana, Hridya, Pathya in Chetovikara.	<b>Madhya:</b> Bhedi, Vistambhi, Abhishyandi. <b>Pakva:</b> Bastishuddhikara, Vrishya.

NIGHANTU<sup>[17]</sup>

S.N.	PROPERTIES	B.P. <sup>[9]</sup>	D.N. <sup>[10]</sup>	R.N. <sup>[11]</sup>	K.N. <sup>[12]</sup>	Sh.N. <sup>[13]</sup>	P.N. <sup>[7]</sup>
1	VARGA	Shaka.	Guduchyadi	Mulakadi	Aushadhi	Guduchyadi	
2	RASA	<b>Pakva:</b> Swadu, Skshar.		Swadu	Swadu	Swadu	Madhur.
3	GUNA	<b>Bal:</b> - Shita. <b>Pakva:</b> Laghu, Na-Aati-himam.			Guru, Ruksha. <b>Bal:</b> - Shita.	Guru.	Shita.
4	VIRYA				Shita.		
5	VIPAKA	-			Swadu	Swadu	
6	DOSHAGNATA	<b>Bal:</b> - Pittapaham. <b>Madhya:</b> Kaphakaraka. <b>Pakva:</b> Sarvadoshajita	Vata-Pittajita.	Pittapaham.	Shleshmal, Vata-Pittajita.	Vata-Pittajita.	Pittapaham.
7	ACTIONS	<b>Pakva:</b> Deepan, Bastishuddhikara, Chetoroghruta,	Vrushya, Hrudya, Chetovikarjita,	Mutraghatahara, Pramehanashan, Kryccha-Ashmari-Chhedana, Vrushya, BALYA, Arochakahara, Trushna-Arti-Shaman.	Vrushya, Hrudya	Bhedy, Abhishyandi, Vistambhee, Bastishuddhikara, Vrushya,	Bruhana, Vrushya, Mutrala, Medhya, kshata-Kshaya, Visarpanuta.

## CONLUSSION

- There is increasing demand for the herbal medicinal plants all over the world because the fact that the allopathic drugs are having more side effects. And kushmand is one of the herbal drug having various actions to cure different types of diseases.
- There are many ingredients like Lupeol,  $\beta$ -Sitosterol & there Acetate, Cucurbitin Vit. C etc. and these are having various important uses that may be useful in curing many diseases like Amlapitta, mutrakrucchata, ashmari chedan, chetovikar-nashan and also having action like deepan, pachan, medhya, vrushya.
- These contains are responsible for antioxidant activity, antistress activity, memory enhancing activity etc.

- After studying different classics and text book along with nighantu it is clear that the kushmand is kept in different vargas like shak, mulakadi, guduchydi, aushadhi etc and there is also having difference in rasa, guna, virya, vipaka, & karama of kusmanda as stated by different acharyas.
- So the present study gives a directions for the different and various uses of contents of kusmand, the efficacy to cure different types of diseases along with its ayurvedic review stating the importance of kushmand in Ayurveda.

## REFERENCES

1. Rajesh kumar sharma et al., antibacterial & antioxidant activity of *benincasa hispida* using hydrogen peroxide scavenging model., *ijpb07/2014; 2(1): 86-94.*

2. Kuntal ghosh & m.s. Baghel., a pharmacognostical & physicochemical study of *benincasa hispida* with ayurvedic review, *ijrap*, 2011; (6): 1664-1668.
3. K. Nishteshwar & K. H emadri; *Dravyaguna Vigyana*; Kushmand; pg no 71-72; Chaukhamba Sanskrit Pratisthana; Delhi; Reprint, 2013.
4. Indradev Tripathi, Raj Nighantu, Krushna Das Academy, Varanasi, First Edition, 1982.
5. Dr. J.L.N. Sastry; *Ayurvedokta Oushadha Niruktamala*; Chaukhamba Orientalia; Reprint - 2014.
6. Priya Vrata Sharma; *Namarupajnam*; Satyapriya Prakashan, Varanasi; First Edition, 2000; Pg no 63-64.
7. Prof. D.s. Lucas; *Dravyaguna Vijana*; Chaukhamba Vishwabharati Varanasi, First Edition, 2008; Pg no 186-189.
8. Wikipedia, the free encyclopedia.
9. Prof. K.C. Chunekar; *Bhavaprakash Nighantu*; Chaukhambha Bharti Academy, Varanasi; Pg no 666-668.
10. Priyavat Sharma; *Dhanvantari Nighantu*; Chaukhamba Orientalia; 4<sup>th</sup> Edition, Guduchyadi Varga; Pg no 49.
11. Indradev Tripathi, Raj Nighantu, Krushna Das Academy, Varanasi, First Edition 1982; Pg No 218.
12. Priyavat Sharma & Guruprasad Sharma; *Chaukhamba Orientalia*, 2<sup>nd</sup> edition, 06, Aushadhi Varga, Pg no 96.
13. Priyavat Sharma, *Shodhal Nighantu*, Orientalia Institute Baroda, 1<sup>st</sup> Edition, 1978, Guduchydi Varga, Pg no 185 & 217.
14. Vidyadhar Shukla & Ravidatta Tripathi; *Charak Samhita*; Chaukhamba Sansrita Sansthana, Edition 2009; Shak Varga; Pg no 400.
15. Ambika Datta Shastri, *Sushrut Samhita*, Chaukhamba Sansrita Sansthana, Edition, 2010; Shak Varga; Pg no 261.
16. Bramhananda Tripathi, *Asthanga Hridaya*, Chaukhamba Sansrita Sansthana, Edition, 2009; Shak Varga; Pg no 105.
17. e-NIGHANTU; <http://niimh.nic.in/ebooks/e-Nighantu>.