

NEUTRACEUTICAL VALUE OF KUSHMANDA AVALEHA AND ITS MEDICINAL APPLICATION

Vitthal G. Bhosle, Tinkle I. Rokde, Darshana S. Khare, Vaishali O. Chute, Rani T. Bhagat, Tulsidas P. Nimbekar
Shri Laxmanrao Mankar Institute of Pharmacy Amgaon, Maharashtra 441902

Corresponding Author: Vitthal G. Bhosle

ABSTRACT

Ayurveda stresses on the use of herbs as both food and medicine based on their nutritional and medicinal value respectively. Nutrition is most important factor while is necessary for every age group. In Ayurveda different therapies like Rasayana, lehana, Urjaskara, Jeevaneeya, Balya sannskaras etc are focused to modulate the immunity or increase vyadhikshamatwa. Avaleha made up of Kushmanda act as a Rasayana which is given in the form of lehan. Kushmanda is the best Ayurveda formulation which provides nourishment, improve appetite and increase the body strength. Kushmanda is used in managing ulcer, epilepsy, urinary disorder, and in treating poisoning. Kushmanda possesses multitude of actions including antidiabetic, anti-inflammatory, antioxidant, hypolipidemics, hypoglycaemic etc. Kushmanda Avaleha is one among Medya Rasayana it will improve memory and retention power.

KEYWORDS: Kushmanda Avaleha , Kohla, Medya Rasayana, Antioxidant

INTRODUCTION

The fruit of *Benincasa hispida* (Thunb.) Cogn. of Cucurbitaceae family commonly known as Ash gourd and “Kushmanda” in Ayurveda is relevant as nutritive source as well as a medicine. Nutrients are necessary for physical activity and for maintaining growth of the children. Nutrients are classified as macronutrients and micronutrients, macronutrients are required in large quantity and referred as a chief energy yielding component of food, like carbohydrates, protein, and fat. Micronutrients are required in very small amount. They play important role in metabolic process and very essential to keep healthy.

Nutrition is a part of growth and development, in children during first 5 year of life when rapid growth occurs nutrition are essential, Nutrition is related to better infant, child and maternal health. Undernourished children have risk of infections, morbidity and mortality. 35% of fewer than 5 children associated with under nutrition cause death. Undernourished children have suffered from cognitive development such as calculation, long term learning, attention executive function, loss of memory and instinctual.

Kushmanda avaleha in Ayurveda is relevant as nutritive source. Its use in psycho-somatic disorders, ulcer, urinary disorders and digestive disorders has been well explored in Ayurveda. Ash gourd is cultivated throughout India and has high market demand owing to its nutritional value and health benefits. It is an important warm-season cucurbit vegetable, grown for its succulent hairy fruits, used as a vegetable, in confectionery and Ayurvedic medicinal preparations.

Kushmanda Avaleha is an herbal preparation which helps in improving overall physical and mental Debility, improving general weakness, increasing body mass in lean person. According to Ayurvedic text Kushmanda Avaleha has Medhya, Balya, Brimhan and Rasayana property. Its contains Carbohydrates, Protein, Fat, Sodium, and Zinc, so Kushmanda Avaleha promoting weight gain and strength, Provide nourishment to the undernourished body.

Kushmanda Avaleha reduce Vata and Pittadosha and useful in summer season. Kushmanda Avaleha is a Rasayana concept given by Acharya Charaka which is a rejuvenation therapy, which help in maintenance and promotion of health and beneficial for children, young and old age people. Kushmanda Avaleha is a food supplement also.

PLANT PROFILE:

Benincasa hispida (Thunb.) Cogn. is a large trailing gourd climbing by means of tendrils; stem is stout, angular and hispid. The leaves have a reniformorbicular shape with 5-7 lobes and are 4-6 inches length. The hairy lobes are ovate-triangular in shape. Flowers are yellow, unisexual, male peduncle 7.5- 10cm long, female peduncle shorter. The fruits are broadly cylindrical, 30-45cm long, hairy throughout, ultimately covered with a waxy bloom. This waxy bloom disappeared when the fruit is fully mature.



Figure: Benincasahispidia plant

Flowering & Fruiting:

June-October. Harvesting of the mature fruits starts in 90-100 days after sowing and may continue up to 150 days after sowing.

Parts used: Fruit, Seeds, seed oil, leaves.

Synonyms: Kushmanda, Pushpaphala, Pitaphushpa, Karkaru, Aaru

Vernacular Names

Hindi - Kumhra, Pani Kumhra, Petha

Kannada - Bood kumbala kayi

Malayalam - Elavan, Kumbalam, Neyakumbalam

Marathi – Kohla

Punjab - Petha Sanskrit - Kushmanda Tamil - Kalyana pooshni, Pushanikai Telugu - Budida-gummadi.

Properties

Charakacharya describes Pakva Kushmanda (mature fruit) to be having Madhura rasa, alkaline nature and light to digest (Laghu), having diuretic and laxative action and Tridosahara property.

Unripe fruit or Bala Kushmanda:

Alleviates Pitta and is cold in potency.

Half ripened fruit (Madhyama): Aggravates Kapham.

Mature fruit (Vridham):

It is not too cold in potency and has Swadu-kshara rasa and Laghu property. It is also said to be Deepana (digestive), Vasti suddhikara (diuretic), Chetorogaharam (useful in psychiatric disorders) and Tridosaharam.

The same properties and actions have been accepted in Dhanwantari Nighantu, Raja Nighantu and Priya Nighantu.



Figure: Main ingredient of Kushmanda Avaleha is Kushmanda

MATERIAL AND METHOD:

Main ingredient of Kushmanda Avaleha is Kushmanda (Ash guard) (Kushmanda phala is

Sanskrit name-Kushmanda

Botanical name-BanincasahispidaFamily-Cucurbitaceae

Rasa panchaka

Guna—Laghu, Snigdha

Vipaka-Madhura

Rasa —Madhura

Virya —Sheeta

Karma- Pitta, Vatahara, Hridya, Vrishya, Brimhana.

Quantity in preparation -100 palas (4.800 kg) Prakshepya dravya ingredient.

Method Preparation of Churna:

All the herbal drugs except Kushmanda were dried, powdered individually in a mixer, and sieved through mesh no-80 to obtain a fine powder.

Preparation of Kushmanda pulp

The collected fresh Kushmanda fruits [Figure 1] were washed with water to remove the physical impurities present. They were cut into small pieces [Figure 2]; the outer hard layer and the seeds of Kushmanda pieces were removed with the help of a knife, placed in a cooker containing double the quantity of water [Figure 3], and steamed for 30 min.

When it became cool, the contents were filtered and the softened pieces of Kushmanda were put in a stainless steel vessel. The pulp obtained was mashed into a soft mass and squeezed through a clean cloth to remove the water.

The remaining part of water was put in separately [Figure 4] for paka preparation and dried pieces [Figure 5]. Then, the pulp was fried in Go-ghrita (cow's ghee) [Figure 6] on moderate fire till it turned to a brownish colour and the ghee was separated [Figure 7].

Preparation of Kushmanda avaleha

Sugar candy in an equal quantity to that of paste was added to the squeezed water and heated on moderate fire, maintaining the temperature in the range of 85o C–95o C till one thread consistency of sugar candy syrup was formed.

Fried paste and then Prakshepa Dravya were added to it, mixed vigorously, and stirred continuously till the confirmatory tests [Figure 8] of Avaleha were achieved. When the temperature of the contents reached room temperature, the prescribed quantity of honey was added and the mixture was again stirred thoroughly.

The formed semisolid dosage form is Kushmanda avaleha is shown in figure below:



Fig: Kushmandapulp



Fig: Kushmanda phala



Fig: Boiling Kushmanda Pieces



Fig: Squeezing out extra water from slices



Fig: Drying slices



Fig: Ghrita in pan

**Figure :Kushmanda Avleha**

Kushmanda.

Latin name: -Benincasa hispida

Medicinal properties: -Ras-Madhur, Veerya-Sheeta, Vipaka-Madhura, Guna-Laghu, Snigdha, DoshghnataVattpittaghna, Prabhava- Medhya.It is highly nutritive with medicinal values.

Chemical constituents: -thiamine (vit B12), curcubitine, riboflavin, Beta-sitosterol, amino acids, Pentacyclic triptenes, Bryonolic acid.

Therapeutic uses: -

Mutraghathar, Pramehnashanam, Mutrakruchchahar, Trushartishamanam Jeernagpushtidam, Aarochak, Balya, Bruhan, Ashmarichedan, Vrushyam, Pittasranut, Vatnut, chetovikarinut(neurological disorders)

Pharmacological Action of kushmanda avaleha

Kushmanda rasayana has following medicinal property:

- Hemostatic (styptic) – Check bleeding
- Strengthening
- Adaptogenic
- Aphrodisiac
- Nervine tonic & brain tonic
- Neuroprotective
- Antitussive
- Cardiac tonic
- Cardioprotective

Kushmanda avaleha indication

Kushmanda avaleha is helpful in following health condition.

- Hemorrhages or bleeding disorders
- Nosebleed or epistaxis
- Phthisis
- Fever
- Dry mouth (xerostomia)
- Excessive thirst (polydipsia)
- Vomiting with sour taste of mouth or acid reflux
- Heartburn, Acid Reflux, GERD, or Hyperacidity
- Bronchitis and cough
- Breathing troubles and asthma with Pitta aggravation
- Physical weakness
- Debility in old age
- Vertigo
- Jaundice

Kushmanda fruit regularly in food for promoting weight gain, promoting strength and for its nourishing property. In traditional practice the mature fruit is administered among malnourished children to help gain weight and establish health. The fruit is cut into pieces and boiled, after draining off the water, the pulp is mixed with ghee and jaggery and administered. A Clinical trial successfully proves the efficacy of Kushmanda (Benincasa hispida) for weight gain in malnourished children.

BENEFITS OF KUSHMANDA RASAYANA:

1.Asthma:

Asthma is an inflammatory condition in which the airways to the lungs swell and narrow. It can make breathing difficult and trigger coughing. According to Ayurveda, the main doshas involved in asthma are Vata and Kapha. Taking Kushmanda Rasayana helps balance Kapha and increases the strength of the lungs due to its Rasayana (rejuvenating) properties. This gives relief from the symptoms of asthma.

2.ChronicBronchitis:

Bronchitis is a condition in which there is an inflammation in the windpipe and the bronchi (branches) of the lungs which results in the accumulation of sputum. It is caused due to an imbalance of Vata and Kaphadoshas. Kushmanda Rasayana is an Ayurvedic preparation that can help remove excessive sputum out of the respiratory tract. This is due to its Kapha balancing properties. It also helps boost immunity due to its Rasayana (rejuvenating) property, providing extra aid in fighting infection.

3.General:Weakness

General weakness is a feeling of body fatigue or tiredness. You may feel a lack of energy. This usually happens when the body is deprived of a continuous flow of energy. It is caused due to an imbalance of Kaphadosha and deficiency of essential minerals in the body. Kushmanda Rasayana has Balya (strength provider) and Rasayana properties which help to reduce the symptoms of fatigue. It also fulfills the requirement of important proteins, calcium, vitamin B, and vitamin C which help in gaining overall strength.

Other medicinal uses of Kushmanda

- Acharya Sarangdhara mentions the use of Kushmanda Swarasa with Laksha Kalka in Raktakshaya, Uroghata and KshayaRoga in Sarangdhara Samhita Madhyama khanda.
- Rasa ratnasammuchhya indicates the usage of fruit juice of ash gourd (Kushmanda Swarasa) along with Vidanga and Sarkara in Prameha.
- Raktasrava in Mandalivisha- kalka (paste) of ash gourd seeds along with garlic (Lashuna) is administered along with Tandulodaka. (KriyaKoumudi)
- Urine retention in Mandalivisha- the Kasaya made of stem of Kushmanda along with Ela churna or Trikatu churna respectively is mentioned in Prayogasammuchhya and Kriyakoumudi for managing urin retention in Mandalivisha.
- Ayurveda classic Bhaisajyaratnavali, also describes the use of ash gourd juice (Kushmanda Swarasa) along with jaggery (Guda) in the management of Madatyaya.

Nutritive Value of Ash Gourd:

Carbohydrates:

It provide energy and essential for digestion and assimilation of other foods 55-60% of total energy intake should come from carbohydrates. Kushmanda Avaleha has 80.44% of carbohydrates which provides 321.76 kcal energy. Carbohydrates provide instant energy due to sugar or jaggery.

Protein:

Protein is the second most abundant substance in the body, next to water. Proteins helps the child to grow and are necessary for the synthesis of tissue in the body, formation of digestive juice, hormone, plasma protein, enzyme, vitamin, haemoglobin, therefore protein are vital for growth and development of every child, In Kushmanda Avaleha contains 5.01% of protein, which provide 20.04 kcal energy to the body.

Energy:

Energy needs of children are for increasing in body size. Energy high metabolic rate that regulates body temperature and physical activity. Kushmanda Avaleha provide total energy 363.13 kcal/100 gm out of this maximum energy comes from Carbohydrates. Which is essential for their physical activities and growth.

Fat:

Fat helps the body absorb Vitamins A, E, D and K, these are fat soluble the can only be absorbed with the help of fats and give energy to the body fats are major source of energy in diet in growing children. 25-30% of energy intake should be derived from fat. Kushmand Avaleha contain 2.37 gm/100gm, fat provides 9 calories per gram energy Kushmanda Avaleha provides only 21.33 kcal of energy. Saturated fat in this formulation contain is 0.82 gm/100. Too much saturated fat in diet can lead to heart disease and other health problems.

Iron:

Iron is also found in Kushmanda Avaleha which supports muscle, metabolism and healthy connective tissue and also necessary for physical growth neurological development iron deficiency anaemia is associated with impaired performance in mental and physical function, and health consequences in young children are serious. Iron is an essential for blood production. Kushmanda Avaleha provides only 1.32 mg/100gm of iron.

Calcium:

Calcium is a mineral which body needs to build strong bone, teeth and play Important role in blood clotting nerve conduction and muscle stimulation. Kushmanda Avaleha contain 158.72 mg/100 gm of calcium.

Sodium:

Sodium 498.51gm /100gm present in Kushmanda Avaleha. Human body requires a small amount of sodium to conduct nerve impulses and balance of water and mineral in our body.

Potassium:

Potassium and sodium are electrolytes that help maintain fluid and blood volume. And both are involved in transport of fluids and nutrients across the cellular membrane. The content of potassium in Kushmanda Avaleha is 464.73 mg/100 gm. Potassium is found naturally in food Potassium maintain fluid level inside cell and helps muscle to contract.

Precaution of Kushmanda avaleha

Kushmanda Rasayana contains some ingredients which may affect blood glucose levels. Therefore, it would be advisable for diabetics to consult a doctor before taking Kushmanda Rasayana Breastfeeding Enough evidence is not available to suggest its use while breastfeeding. Kindly consult your doctor before using it. Patient with heart disease Patients on medication for hypertension should consult their doctor before using Kushmanda Rasayana. Pregnancy Enough evidence is not available to suggest its use in the case of pregnancy. Kindly consult your doctor before using it.

SIDE EFFECTS

Kushmanda Rasayana has a moderate effect and does not cause any negative side effects when taken at the recommended dosage. However, it is best to see a doctor before using Kushmanda Rasayana. Kushmanda Rasayana has compounds that may influence your blood glucose levels. Diabetics should consult a doctor before taking Kushmanda Rasayana. There is not sufficient information to recommend its use when breastfeeding or pregnant. Please with your doctor before using it. Patients on hypertension medications should consult with their doctor before using Kushmanda Rasayana. There is no data about the habit-forming effects of Kushmandaka Rasayana.

Contraindication

There is no absolute contraindication for Kushmanda avaleha

Kushmanda avaleha during pregnancy and lactation: In ayurveda, Kushmanda Rasayana is used during pregnancy for nourishing the mother and developing a baby. However, the safety of Kushmanda Rasayana is not fully clear. Consult an ayurvedic physician before using Kushmanda Avaleha during pregnancy. Kushmanda Rasayana is likely to be safe to consume by lactating mothers. There are no adverse effects reported with the use of Kushmanda Avaleha in lactating mothers and breastfeeding babies.

DISCUSSION

Infant and children have higher requirements for nutrients than adults. While adults need nutrients for maintaining constant body weight and functions and children require nutrients for maintenance, promoting, and supporting their rapid rate of growth and development nutritional requirement per kg body weight of children is higher than that of adults.

CONCLUSION

Kushmanda avleha is beneficial for both young and old age group. It is used as an ayurvedic supplement that provides strength, nourishment to the body, enhances the immunity. Kushmanda avaleha contain high percentage of carbohydrates hence it plays an important role in nervous system. Its medhyaprabhava described in Ayurveda so it can be best solution for mental disorders and Sodium present in it also helps to reduce excess of heat and elevated pitta in body.

REFERENCE

1. Sharma PV. Dravyaguna Vijnana, part 4, Chaukhambha Bharati Academy, Varanasi; 2006. Page 14.
2. Benincasa hispida (Thunb.) Cogn. India Biodiversity Portal. Available at <https://indiabiodiversity.org/species/show/244546>
3. Ministry of health and family welfare. Department of Ayush. Ayurveda Pharmacopeia of India. Part 1. Vol 4. Kushmanda. Page 55
4. Veni Bharti, Kiran, Surendra Kumar Sharma and Sumitra Singh, 2013. Evaluation of the Memory and Learning Improving Effects of Benincasa hispida Seeds in Mice. Pharmacologia, 4: 249-253.
5. Firke AR, Bobade RB. An Exploratory Clinical Trial to Evaluate Efficacy of Kushmanda (Benincasa hispida) for weight gain in Malnourished Children. J Ayu Herb Med 2019; 5(3): 87-89.
6. Majumdar A. Evaluation of Anti-nephrolithic & Diuretic Activity of Seeds of Benincasa hispida R.Br. Inventi Rapid: Planta Activa Vol. 2012, Issue 3 Available at https://www.researchgate.net/publication/315117711_Evaluation_of_Antinephrolithic_Diuretic_Activity_of_Seeds_of_Benincasa_hispida_RBr.
7. Sastry JLN, Chuneekar KC. Dravyaguna Vijyana. Chaukhambha Orientalia Varanasi. reprint ed. 2016;2:242.
8. Ghai OP, Vinod PK, Arvind B. Essential pediatrics. 9th ed CBS Publisher and Distributors Delhi, chapter 8, Micronutrients in Health and disease; 2019;108.
9. Ghai OP, Vinod PK, Arvind B. Essential pediatrics. 9th ed CBS Publisher and Distributors Delhi, chapter 8, Micronutrients in Health and disease; 2019;121.
10. Available from: <https://www.fda.gov/food/nutrition>.
11. Nelson, text book of pediatrics. South Asia edition. Vol. 21st ed. 2021;1.

12. Sharangdhar, MadhyamKhanda 8/1-3 SharangdharSamhita commentary with Dipika and Gudharthadipika Commentary,4th Ed, Varanasi, ChaukhambaOrientalia,:2000 p 20676.
13. Bhaishyajaratnawali, Pro. SidhdhinandanMisra, ISBN:978-93-81484-90-6, Choukhambhasurbharatiprakashan,Varanasi221001
14. Reena Kulkarni, et al, Nootropic herbs (Medhya Rasayana) in Ayurveda: An Update, Pharmacognosy Reviews | JulyDecember 2012 | Vol 6 | Issue 12