

Nutraceutical Value of *Narikela Khanda* and its Importance for Children's Growth and Nutrition: A Review Article

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ABSTRACT

Every age group needs proper nutrition. The three foundations of Ayurveda-Diet (Ahara), Sleep (Nidra) and Celibacy (Brahmcharya)-are referred to as Trayopstambh in Ayurveda. The three pillars support the body.^[1] Among these sub-pillars, Ahara is the best medication possible. It provides nutrition for the mind, body and spirit. Acharya Kashyapa referred to Ahara as Mahabhaishajya, which means "greatest and best medicine".^[2] Children who engage in hard cuisine develop karshya, a clinical ailment that causes their bodies to eventually become emaciated and make them excessively thin.^[3] *Narikela Khanda* is an Ayurvedic formulation which provides nourishment, improves appetite and increase the body strength, it is mild formulation that can be used in children as well as old person. According to Bhaishajya Ratnavali *Nariekla Khanda* is Balya, Vrishya and Pushtikar and can be used as generalized tonics for the healthy body. *Narikela Khanda* has been prepared as per the reference given by Kaviraj Govind Das Sen in Bhaishajya Ratnavali.^[4]

Keywords: *Narikela*, Coconut, Growth and Development.

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INTRODUCTION

Food plays a significant role in the human body from conception to the end of human life. Children need nutrients to maintain their growth and engage in physical exercise. There are two types of nutrients: macronutrients, which include carbs, protein and fat, are needed in significant amounts and are known as the main source of energy in diet. Micronutrients are needed in very small quantities. They have a significant impact on metabolism and are vital for maintaining good health. Instead of producing energy, these micronutrients serve a defensive function and are crucial for maintaining general health and boosting immunity.^[5] Every vitamin function in collaboration and deficiencies in just one of the vital nutrients can lead to health issues. Growth and development are influenced by nutrition; during the first five years of life, when children grow at a high rate, nutrition is crucial. Nutrition is also linked to improved maternal, baby and child health. Children that are malnourished are more susceptible to infections, illnesses and death. 35% of children under five who suffer from malnutrition die. Poor nutrition is closely linked to low cognitive function, low schooling, lean weight and shorter height.^[6] Children that are malnourished have problems with cognitive development,

including calculation, long-term learning, attention, executive function, memory loss and impulsive.^[7] According to the NFHS-4 (2015-16), Chhattisgarh had a 37.7% malnutrition rate, while the national average at the time was 35.8%. In the meantime, the NHFS-5 survey report shows a 6.4% decrease in the state's malnutrition rate.^[8] Some Gramme Panchayats in Chhattisgarh launched the Mukhyamantri Suposhan Abhiyan and other nutritional programs and the Nutrition Campaign has been a huge success during the last three years.^[9] 1.70 lakh children are no longer malnourished. Due to inadequate protein and energy intake, tribal women give birth to low-birth-weight babies and women and children in the tribe suffer from high rates of malnutrition. Low birth weight babies receive inadequate medical care.^[10] Every district in Chhattisgarh has a wasting level of more than 15%, according to NFHS-4 statistics, although Bastar has the highest (ranked as very high).^[11]

The most important aspect of life, according to Ayurvedic texts, is hara; a happy and healthy existence depends entirely on eating wholesome food at the appropriate time and in the appropriate quantity, whereas disorder is caused by unwholesome food.^[12] Rasa, Rakta, Mamsa, Meda, Asthi, Majja, Sukra and other Uttrottara dhatu were all nourished by Ahara Rasa, the end product of wholesome food.^[13] Rasa Dhatu generation decreases as a result of vitiation of the vata circulatory system; this deficiency prevents Rasa Dhatu from nourishing the tissue, resulting in additional emaciation or an overly lean body. Overly thin individuals with significant vascular networks, Shushka Sphik (dried up buttocks), Shushkaudara (dried up belly), Shushkagreeva (neck)



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and Twakgasthishesha (just skin and bone remnants) are all affected.^[14] Even with the perfect diet, children with proper Agni can become feeble, according to Acharya Yogratnakar.^[15] Narikela Khanda is a herbal supplement that helps lean people gain more body mass, improve general weakness and increase overall physical and mental debility. Narikela Khanda possesses Balya, Brimhan, Pushtikara and Rasayana properties, per an Ayurvedic literature. Because it contains carbohydrates, protein, fat, sodium and zinc, *Narikela Khanda* helps the body that isn't getting enough nutrients build weight and strength. During the summer, Narikela Khanda is beneficial as it reduces Pittadosha and Vata. Formulated by Bhaishajya Ratnavali, Narikela Khanda is a rejuvenating therapy that is good for kids, young adults and the elderly. It also helps to maintain and promote health. Narikela Khanda is also used as a food supplement.

In five basic Kalpana Narikela Khanda or Narikela Khanda (Brihat) is mentioned in *Panchvidh Kashaya Kalpana*. It has been prepared as per reference of Bhaishajya Ratnavali. Avaleha Kalpana or leha Kalpana (Granules) is a semi solid preparation of drugs prepared with addition of jaggery, sugar or Khand (sugar candy) and boiled with prescribed juice or decoction (Ministry of health).^[16] An indication of how much a food contributes to the diet's nutritional content. The amount of food that is digested and absorbed as well as the number of vital elements (protein, fat, carbohydrates, minerals and vitamins) that it contains determine this value.^[17] Jaggery gives Avaleha Kalpana a longer shelf life and enhances both physical and mental well-being by giving the body strength and nourishment. The sweetness agent makes it easy for kids to take. Thus, the evaluation of Narikela Khanda's nutritional value in children with *Karshya* (underweight) served as the foundation for this study.

METHODOLOGY

Main ingredient of *Narikela khanda* is Narikela Phala (Coconut) (Narikela phala is shown in Figure 1).

Sanskrit name-Narikela,

Botanical name-*Cocos nucifera*,

Family- Palmae,

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^[17] ingredient given in Tables 1 and 2.

Preparation of *Narikela Khanda* (Figure 2)

Method of preparation of *Narikela Khanda*-1. Took all ingredients of Prakshepya dravya of Pharmacopoeia quality. 2. Powdered all the ingredients and passed it through sieve number 85. 3. Grated the coconut endosperm. 4. Narikela Jala was reduced to 1/4th then added khanda sarkara to it and made a single thread syrup. 5. Simultaneously cow milk was reduced to milk solids (khoya). 6. The grated coconut is fried in the Ghrita with constant stirring maintaining the temp between 800-900 until it turned brownish in color. 7. Fried coconut is added to single thread syrup and continuously stirred maintaining the temperature between 900-1000. 8. Took the preparation off heat then added all the dry

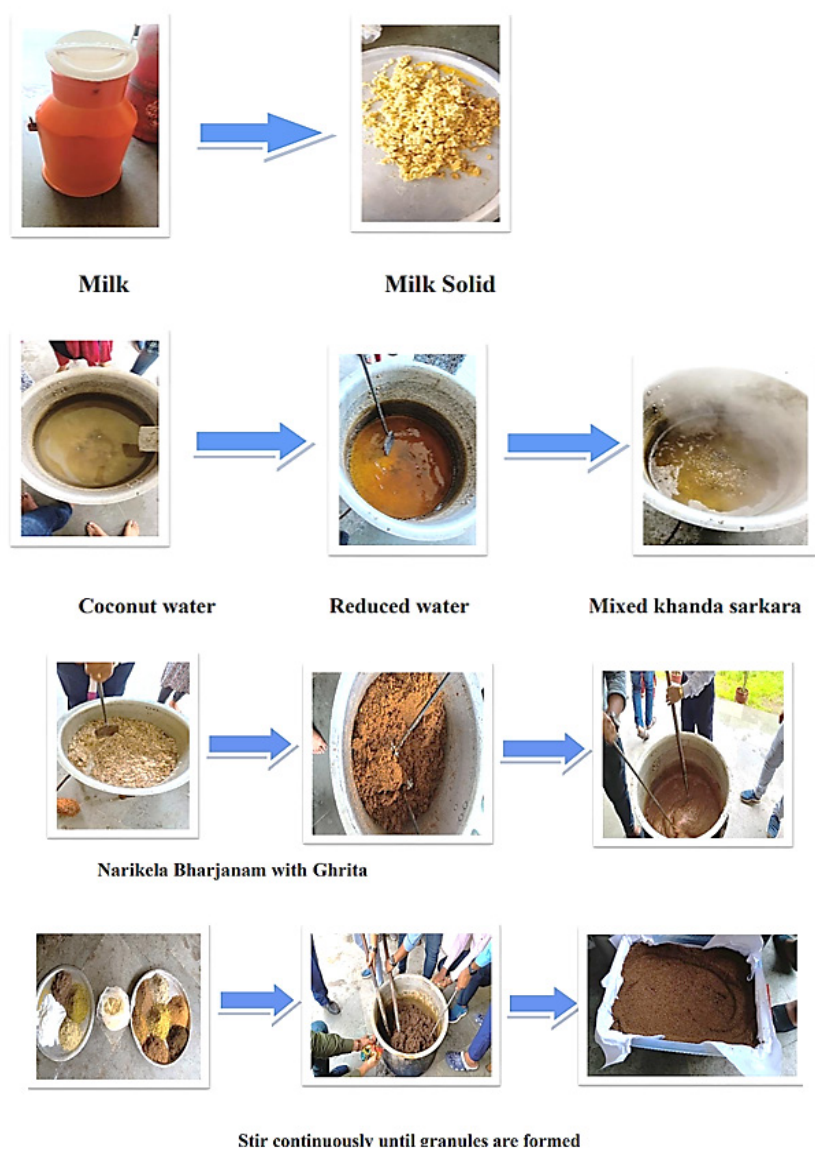


Figure 1: Main ingredient of *Narikela khanda* is *Narikela Phala* (Coconut).

Table 1: Nutritional Value of Narikela Khanda.

Sl. No.	Parameters	Units	Methods	Results of analysis as per 100 g	RDA value*	% RDA
1	Total fat	G	By FSSAI manual for cereal and cereal products (14.5) 2016	15.09	67	22.52%
2	Protein	g	By FSSAI manual for cereal and cereal products (8.7) 2016	7.09	-	-
3	Total carbohydrate	G	SOP-CHM-28-00	69.10	-	-
4	Energy	Kcal	SOP-CHM-29-00	440.57	2000	22.03%
5	Total Sugar	G	By FSSAI manual for fruits and vegetables products (2.6) 2016	27.07	-	-
6	Cholesterol	mg	AOAC 994.10 20 th edition	BLQ	-	-
7	Calcium	Mg	SOP-CHM-27-00	101.07	-	-
8	Potassium	Mg	SOP-CHM-27-00	498.13	-	-

*Percentage contribution to recommended dietary allowance calculated on basis of 2000 kcal energy, BLQ-Below Limit of Quantification

**Figure 2:** Preparation of Narikela Khanda.

ingredients (*Prakespa Dravya*) and stirred it continuously until granule formation.

RESULTS

Nutraceutical value of *Narikela Khanda*

Food product testing is done to provide accurate information about the nutritional value and safety of the food. Nutrition analysis is the process through which food nutrient contain is determined, it can be determining nutrient content is done using laboratory analysis. Nutraceutical value of *Narikela khanda* test result obtained through laboratory investigation.^[18]

Nutraceutical value of *Narikela khanda* mentioned in Tables 1 as per laboratory results.^[19]

DISCUSSION

Compared to adults, infants and children have greater nutritional needs. Children have a larger nutritional requirements per kilogram of body weight than adults do, since adults need nutrients to keep a steady body weight and functions, while children need nutrients to sustain, promote and support their rapid pace of growth and development.

Carbohydrates: Carbohydrates provide energy and essential for digestion und assimilation of other foods 55-60% of total energy intake should come from carbohydrates. Our brain always needs some glucose for energy and source of fuel for the brain.^[20] *Narikela khanda* has 69.10 g in 100 g of carbohydrates. Carbohydrates provide instant energy due to sugar or jaggery.

Protein

Protein is the second most abundant substance in the body, next to after water. Proteins helps the child to grow and necessary for the synthesis of tissue in the body, formation of digestive juice, hormone, plasma protein, enzyme, vitamin, hemoglobin, therefore protein are vital for growth and development of every child.^[21] *Narikela khanda* contains 7.09% of protein in 100 g.

Energy

Energy needs of children are for increasing in body size. Energy high metabolic rate that regulates body temperature and physical activity. *Narikela khanda* provides total energy 440.57 kcal/100 g out of this maximum energy comes from Carbohydrates.^[22] This is essential for their physical activities and growth.

Fat

Fat helps the body absorb Vita A, E, D and K, these are fat soluble that 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. 20-30% of energy intake should be derived from fat.^[23] *Narikela Khanda* contains 15.09 g/100 g, fat provides 9 calories per gram energy.

Table 2: Prakshepa Dravya of Narikela Khanda.

Drug Name	Latin Name	Part Used
Pippali	<i>Piper longum</i> Linn.	Fruit
Gajapippali	<i>Scindapsus officinalis</i> Schoott	Fruit
Vanshalochan	<i>Bambusa arundinaceae</i> Willd.	Siliceous Concretion
Nagarmotha	<i>Cyperus rotundus</i> Linn.	Rhizome
Maricha	<i>Piper nigrum</i> Linn	Fruit
Tejapatra	<i>Cinnamomum tamala</i> Nees	Leaf
Twak	<i>Cinnamomum zeylanica</i> blume	Bark
Ela	<i>Elettaria cardamomum</i> Maton	Seeds
Nagkesar	<i>Mesua ferrea</i>	Stamen
Dhanyak	<i>Coriandrum sativum</i>	Fruit
Shweta Jeerak	<i>Cuminum cyminum</i> Linn.	Fruit

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.^[24] *Narikela khanda* constituent 101.07 mg/100 g of calcium.

Potassium

Potassium and sodium are electrolytes that help maintaining fluid and blood volume and both are involved in transport of fluids and nutrients across the cellular membrane.^[25] The content of potassium in *Narikela khanda* is 498.13 mg/100 g. Potassium is found naturally in food Potassium maintain fluid level inside cell and helps muscle to contract.

Cholesterol

All of the cells in body contain the waxy, fat-like material known as cholesterol. Vitamin D, hormones and chemicals that aid in food digestion are all made by the body using cholesterol. *Narikela khanda* has BLQ (Below Limit of Quantification) of cholesterol in 100 g.

However, *Narikela Khanda* Avaleha Kalpana relies heavily on the Prakshepya component, which serves as Rasayan, Pachan, Ruchikara and Deepana. Shunthi, maricha and pippali aid in digestion and have carminative properties, whereas twak, ela and tejpatra raise Avaleha's test results. Prakshepya dravya improves Avaleha's medicinal effectiveness and body bioavailability.^[26]

Narikela Khanda is useful for Amlapitta (GERD), chronic respiratory conditions (swasa, kasa), people recovering from fever to increase their strength and thirst, TB patients to improve their overall health and respiratory strength, emaciated people to strengthen or nourish and Rasayana. Acharyas claim that *Narikela Khanda* assumes the roles of Brimhana, Amlapittahara, Pittahara, Balya, Pushtikar, Brimhana and Vastivishodha. *Narikela* fruits provide both therapeutic and nutritional benefits.^[27] In the Chhattisgarh region, it is a popular food that is simple to cultivate in a home garden and doesn't require any additional work. Commercial cultivation is also practiced. Since making *Narikela Khanda* is simple, it can also be prepared at home.

CONCLUSION

Narikela Khanda is a gentle herbal remedy that can be used to help young people and elderly individuals overcome weakness and debility following illness. It is a general tonic that is also known as *Balya* and *Pushtikar*. It can be used to treat *Amlapitta* because *Narikela* khanda lowers increased Pitta. According to Bhavmishra, *narikela* fruit is a *Balya* and *Brimhana* medication that treats mental disorders by acting on the neurological system since it contains sodium. Protein, energy, carbohydrates and vitamins are all present in *Narikela Khanda*. Vitamins also boost immunity, so they can be utilized to help malnourished and underweight kids gain weight and nourish their bodies. The *Brimhana*, *Balya* and *Rasyana* properties of *Narikela Khanda*, according to Acharyas, are those that give strength, sustenance and improving weight property.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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