

KNOW THE VEGETABLES BEFORE YOU EAT - A NUTRITIVE REVIEW ON SHAKA VARGA

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ABSTRACT

Food is the source of energy. Intake of proper, adequate nutritious food keeps oneself healthy. Our Traditional science has given more importance to the intake of, variety food articles like vegetables, fruits, whole grains on the basis of Rasapanchakas. The modern Nutrition focuses on, the amount of proximate principles (nutrients) present in it. In this article an attempt is made to review the vegetables (shakas) as described in age old classics and correlation of the same with the amount of nutrients present in it according to modern nutrition.

KEYWORDS: *Shaka varga*, Health, Nutrition, Vegetables, *Ayurveda*.

INTRODUCTION

“Na cha ahara samam kinchith bhaishajyam upalabhyate”⁽¹⁾

No medicine is equivalent to food and it is possible to make a person disease free with a proper diet. In order to maintain a good relationship between the diet, health and disease, a well balanced nutritious diet is important². Among which vegetable nutrition has widely drawn the attention of fitness conscious and various proven health benefits. *Shakha Varga* (group of vegetables) is one among the various food substances explained in classical texts. Its divided into 6 categories based on their origin and appearance such as: **patra shakha** (leafy vegetables), **pushpa shakha** (flowering vegetables), **phala shaka** (fruit form of vegetables),

naala shakha (hollow vegetables), **kanda shakha** (tuber form of vegetables), **samswedaja** (grows with the help of moisture in bhoomi or wood).⁽³⁾ Appropriate knowledge regarding properties of different vegetables as illustrated in the Nigantu and its modern approach of nutrient rich vegetables is important as it benefits, in prevention and cure of different diseases.

The different types of vegetables mentioned are considered to be heavy for digestion from their ascending order (Uttarottara Gurutha).

PATRA < PUSHPA < PHALA < NAALA < KANDA < SAMSWEDAJA

1. PATRA SHAKA

1.Upodika 2. Palakya, 3. Thanduliyaka 4.Methika 5. Dhanyaka 6. Cabbage

Vegetable	Rasa	Guna	Virya	Vipaka	Doshakarma	Pathya	Apathya
1.UPODIKA⁽⁴⁾ Malabar Spinach, Climbing Spinach, <i>Basella Rubra</i>	Madhura	Guru Snigdha	Sheetha	Madhura	Kapha kara Vata pittha hara	Sheethapitta Anidra Shukra Kshaya	Mandagni Shwasa, Kaasa
2.PALAKYA⁽⁵⁾ Paalak, Spinach	Madhura	Guru Ruksha	Sheetha	Madhura	Vata kapha kara.	Aruchi, Rakta Vikara, Madavikara Apathya, Skin Disease, Shwasa	-

3. Dhanyaka^[6] Dhaniya Patta Coriander Leaves	Kashaya, Tikta, Madhura	Laghu, Snigdha	Ushna	Madhura	Thridosha shamaka	Thrishna, Ajirna Daha, Shula Kasa, Shwasa Krimi Roga	-
4. Methika^[7] Methi, Fenugreek	Katu	Laghu, Ruksha	Ushna	Katu	Vata kapha shamaka	Jwara Aruchi Shoola	-
5. Thanduliyaka^[8] Chaurai, Green Amaranth	Tikta, Madhura	Laghu, Ruksha	Sheetha	Madhura	Pitta kapha shyamaka	Madavikara Rakthapitta Visha Vikaras	-
6. Patta Gobhi^[9] Cabbage	Kashaya, Tikta	Laghu, Ruksha	Sheetha	Katu	Vatakara, Kaphahara		-

NUTRITIVE COMPOSITION AND HEALTH BENEFITS OF PATRA SHAKHAS

- 1. Upodika (Basella):** Very low in calories and fats. It holds incredibly good amount of vitamins (> **vit C**), Minerals (**Potassium and Manganese**) and antioxidants (**β-Carotene, Lutein, Zeaxanthin**) these compounds act as protective scavengers against **oxygen-derived** free radicals.

Uses: prevents Osteoporosis (weakness of bones), Iron-deficiency Anemia, protects from Cardiovascular diseases and Cancers of the colon.^[10]

- 2. Dhaniya (Coriander):** It has **11 components of essential oils**, six types of acids (**ascorbic acid-vitC**), minerals and vitamins.

Uses: Studies have shown that it lowers skin inflammation, lowers the cholesterol level, can be used in treating diarrhoea, means of preventing nausea, vomiting, indigestion and other stomach ailments, regulates blood pressure, can be used in mouth ulcers, prevents anaemia and act as anti allergic source.^[11]

- 3. Methi (Fenugreek):** It consists of mucilage, volatile oil, alkaloids, and all the primary nutrients. Studies

show the presence of **trimethylamine neurin and betain** similar to alkaloids.

Uses: Stimulates the appetite by its action on nervous system, diuretic action. Leaves are used to treat bowel problems, lowers cholesterol, lowers blood glucose levels, improves the health of the skin and used for long and lustrous hair growth.^[12]

- 4. Thanduliyaka (Amaranthus):** Power house of iron, vitamins, and minerals. **Rich in iron content and dietary fibres.** **Uses:** Regular consumption helps in easy digestion, excessive menstruation, and weight management. The **presence lysine (amino acid)** helps to fight against free radicals. Also helpful in treating premature hair graying, loss of hair and mouth ulcers.^[13]

- 5. Patta Gobi (Cabbage):** Rich in phytonutrient antioxidants. fresh leaves are nutritious but very low in fat and calories. It's a storehouse of various phytochemicals. Fresh cabbage is an excellent source of natural antioxidant; **vitamin C** and excellent source of **vitamin K.** **Uses:** vitamin K plays a potential role in keeping up bone health. Researches have shown that it has a role in cure of alzheimers disease, by limiting neuronal damage in their brain.^[14]

2. PUSHPA SHAKHA

1) kadali pushpa 2) Phool gobi

Vegetable	Rasa	Guna	Virya	Vipaka	Doshakarma	Pathya	Apathya
1. Kadali pushpa^[15] (Banana flower)	Madhura, Kashaya	guru, rooksha	sheeta	madhura	Vata-pittahara	Kshaya Rakthapitta Yoniroga	-

- 1. Kadali pushpa (Banana flower):** Rich in dietary fibers, proteins, unsaturated fatty acids. Its rich in vitamin E and flavonoids.

Uses: A study published in parasitology research states that **banana flower extracts inhibits the growth of the malarial parasite.** Experimental study has proved the reduction in blood glucose levels and increase of total hemoglobin in rats.

Cooked **banana flower with curd increase the level of progesterone and their by reduce bleeding associated with menorrhagia.**^[16]

- 2. Phool Gobi Cauliflower:** Its rich in antioxidants and vitamins but low in fats and cholesterol. Fresh cauliflower is an excellent source of vitamin c.

Uses and unique components: The presence of **plant sterols like indole-3-carbinol functions as an anti-estrogen agent.** Potassium is an important **intracellular electrolyte** helps to counter the hypertension effects of sodium.

Precaution: may cause swelling of the thyroid gland and thyroid hormone deficiency due to the presence of **goitrogens**, hence it should be avoided in individuals with thyroid dysfunction.^[17]

3. PHALA SHAKHA

1.Kooshmanda 2.Kooshmandi 3.Karkati 4.trapusa 4.Patola 5.Karavellaka 6.Raaja koshtaki 7.Patola 8.Shigru 9.vrinthaka 10.Okra 11.tomato

Vegetable	Rasa	Guna	Virya	Vipaka	Doshakarma	Pathya	Apathya
1.Kooshmanda ^[18] Petha, Ash Gourd	Tikta	Guru	Sheetha	Madhura	Baala-Pittahara, Madyama- Kaphahara Vridha- Sarvadoshahara	Ashmari Vataraktha Manasika Vikaras Amalapitta	Atisaara
2.Kooshmandi ^[19] Karkaru Kaddu, Pumpkin	Madhura	Ruksha, Guru	Sheetha	Madhura	Pakwa Phala- Pittakara, Kaphavatahara Apakwa Phala- Thridoshakaraka	Vibanda	Atisaara
3.Karkati ^[20] Ervaruka Kakadi, Cucumber							
Apakwa Phala	Madhura	Ruksha, Guru	Sheetha	Madhura	Pittahara.	Daha Mutrakrichra Klama Thrishna	-
Pakwa Phala	Madhura	Ruksha, Guru	Ushna	Madhura	Pittakara	Agnimandya	Jwara Raktapitta
4.Trapusa Variety Of Karkati	Madhura, Tikta	Ruksha, Guru	Sheetha	Madhura	Pitta Hara	Mootrakriccha Rakthapittaha Daha	-
5.Karavellaka ^[21] Karela, Bitter Gourd	Tikta, Katu	Laghu	Sheetha	Katu	Kaphapittahara, Vatakara	Madhumeha Shwithra Sheethapitta Amavata	Vathaja Vikaras Gridrasi Sandivata Pakshaghata
6.Rajakoshathaki Torai/Turai ^[22] Ridge Gourd	Madhura.	Laghu, Snigdha	Sheetha	Madhura	Kapha- Vatakara, Pittahara	Jwara Krimi Shwasa Kaasa	Chardi
7.Patola ^[23] Padwal, Snake Gourd	Tikta	Laghu, Snigdha	Ushna	Madhura (Ch,Ah) Katu(Su)	Pittakaphahara (Ch.Su.Ah) Thridoshahara (Bp)	Atisaara Kaamala Madhumeha Kasa Shwithra Amavata Vataraktha	-
8.Shobhanjana ^[24] Sahjan, Drumstick	Katu Tikta Madhura	Laghu, Rooksha, Theekshna, Ushna	Ushna	Katu	Kapha- Vatahara, Pittakara	Ashmari Sheethapitha Amavatha Pakshaghatha	Pravahika Rakthapitta
9.Vrinthaka ^[25] Baingan, Eggplant/ Aubergine/ Brinjal	Madhura, Katu Tikta	Laghu, Rooksha	Ushna	Katu	Kapha- Vatahara, Kinchid	Kasa Pakshaghata Sthoulya	Ashmari

					Pittajanaka	Sleepada	
10.Okra Bhindi Lady's Finger	Madhura, Kashaya	Guru, Snigdha, Picchila	Sheeta	Madhura	Kapha- Vatakara, Pittahara	Vibanda Madhumeha	Manyasthamba Thamakashwsa
11.Tomato ²⁶ टमाटर Tamaatar	Amla, Madhura	Guru, Snigdha	Sheeta	Amla	Kaphakara, Vatashamaka		

1. **Kooshmanda (Ash gourd):** Also called as Winter Melon, rich in **vitamins (B1, B3 and C)**, possesses various minerals like calcium, sodium, potassium, selenium and 96% of water.

Uses: Due to **high content of potassium** helps to maintain blood pressure level. Acts as diuretic, helps in losing weight, prevents migraine, on regular use, A good source to maintain energy levels.

Precautions: it should be consumed in lower quantity as it may cause indigestion and should be avoided in initial days of pregnancy.^[27]

2. **Kooshmandi (pumpkin):** It is the best source of **beta carotene**- (a powerful antioxidant), fibre, potassium and vitamin C and vitamin A.

Uses: gives protective mechanism to asthma and heart diseases, helps to promote a healthy complexion, hair growth and weight loss. Vitamin A in pumpkin (beta carotene when consumed converts to vit A) is also essential during pregnancy and lactation.^[28]

3. **Karkati (Cucumber):** Good sources of **phytonutrients like flavonoids, lignans**. The peel and seeds are the most nutrient dense parts of the cucumber. They contain fibre and beta carotene. Cucumber seeds are a good source of minerals and **contains calcium**.

Uses: Preliminary researches suggest intake of cucumbers promotes anti-wrinkling and anti aging activity. **Cucurbitacin B** present in cucumber inhibits growth of cancer cells.^[29]

4. **Karavellaka (Bitter gourd):** It has all the essential primary nutrients and phytochemicals like **insulin like peptides, alkaloids, and charantin**.

Uses: lowers blood and urine sugar levels, blood purifying agent, a remedy for piles. It contains **cellulose** which is a source of fibre hence prevents constipation and acts as digestive stimulant, helps in bile juice secretion, acts as an **antidote** for alcohol intoxication.^[30]

5. **Rajakoshathaki (Ridge Gourd):** It contains **cucurbitacin B, E and oleanolic acid**. It also contains **triterpene saponins**.

Uses: Various researches have proved ridge gourd to have anti diabetic and anti hyperlipidemic activity, anti cancer activity, anti oxygenic activity. In Ayurveda this fruit juice or seeds grinded is used as **nasya to treat headache**.

Precautions: it may cause emesis and purgation hence should be avoided in diarrhea and vomiting.^[31]

6. **Patola (Snake gourd):** Also known as Chinese cucumber. Has low calorie with minimum sugar content Fat free and high moisture content, high in vitamins, minerals, moisture.

Uses: has low glycemic index hence indicated in type 2 DM, high fibre content reduces bloating, has diuretic properties and antioxidant property, Aids in weight loss.

Precautions: High amount of intake should be avoided in pregnancy.^[32]

7. **Shobhanjana (Drumstick):** This possesses unique nutritional qualities. Leaves are an excellent source of proteins. Fresh pods and seeds are excellent source of **oleic acid (mono unsaturated fats)**. Excellent source of vitamin C, rich source of vitamin B6 and thiamin., minerals like calcium, iron, copper, manganese.

Uses: acts as an immune booster.^[33]

8. **Vrinthaka (brinjal, eggplant):** Eggplant contains important phytonutrients (phenolic compounds) such as **Caffeic acid and chlorogenic acid, flavonoids such as nasunin** **Uses:** Cardiovascular health and free radical protection is provided by the egg plant.^[34]

9. **Okra (Ladies Finger):** It's a part of balanced diet. Its free of fat, cholesterol, and sodium. It Contains negligible amount of sugars making it ideal diet.

Uses: Helps to improve immunity, eyesight, aids in weight loss, prevents constipation and diabetes mellitus.^[35]

10. **Tamaatar (Tomato):** These are very low in fat content and have **zero cholesterol**. Source of antioxidants, dietary fibres, minerals and vitamins (vit A and vit C). **lycopene –a flavonoid**

antioxidant is the unique phytochemical compound present in tomato. **Uses:** Antioxidants present in tomato have protective action against various cancer

and protects the skin. **Zea-xanthin another flavonoid protects eyes** from age related macular disease.

4. NAALA SHAKHA^[37]

Vegetable	Rasa	Guna	Viryā	Vipaka	Doshakarma	Pathya	Apathya
Sarsapa nala. Mustard	Katu, tikta	Ushna, snigdha	ushna	katu	kapha-vatahara	Kusta krimi	-

5. KANDA SHAKA

1.Soorana 2.Lashuna 3.Palandu 4.Aluka 5.Mulaka 6.Grinjanaka 7.Shalgam.

Vegetable	Rasa	Guna	Viryā	Vipaka	Doshakarma	Pathya	Apathya
1.Soorana ^[38] Sooran Elephant Foot Yam	Kashaya, Katu	Laghu, Rooksha	Ushna	Katu	Kaphahara	Arsha Pleeha Roga Gulma	Dadru Kushta Rakthapitta
2.Lashuna Garlic Lehsun	<i>Katu, Madhura</i>	Snigdha, Guru, Tikshna	<i>Ushna</i>	Katu	<i>Kapha, vata shamaka</i>	Kasa Shwasa Prameha Kushta Ama Gulma Hridroga Bagna	Rakthapitta Grahani
3.Palandu Onion Pyaj Allium Cepa	<i>Madhura, Katu</i>	Snigdha, Guru, Tikshna	Kinchidu <i>shna</i>	Madhura	<i>Vatahara, Na- Atipittala, Kaphavardaka</i>	-	-
4.Aluka ^[39] Potato Aaloo Solanum Tuberosum	Madhura	Guru, Rooksha	Ushna	Katu	Kaphavatakaraka	Rakthapitta	All Vata Vikaras Sthoulya
5.Moolaka ^[40] Mooli Radish Raphanus Sativus Baala Moolaka Mahamoolaka	Tikta, Katu Katu, Madhura	Laghu, Rooksha Rooksha, Theekshna, Guru	Ushna Ushna	Katu Madhura Vipaka	Thridosha Hara Thridosha Kara	Sheethapitta Dusta Prathishyaya	- Swithra Vataraktha Vicharchika
6.Grinjana ^[41] Carrot Gaajar Daucus Carota Sativus	Madhura, Tikta	Laghu, Rooksha, Theeksna	Ushna	- Katu	Vatakaphahara, Rakthapittahara	Jwara Krimi Shwasa Kaasa	Chardi
7. Shalgam turnips Brassica Rapa	Madhura	Guru, Snigdha	Sheetha	Madhura	Vatakaphakara, Pitthahara	-	-
8.Beetroot Chukandar Beta Vulgaris	Madhura	Guru, Snigdha	Sheetha	Madhura	Vata-Pittahara	-	-

1. **Soorana (Elephant Foot Yam):** Consists of **omega 3 fatty acids, High in vitamin B6, A, C.** Magnesium, Potassium and Phosphorous are the key elements found in elephant yam.

Uses: The cooling effect of yam can cure hypertension, acts as an anticoagulant, maintains the hormonal balance and increase the estrogen level in women (can relieve from pre menstrual syndrome, reduces the muscle spasms) Increase the good cholesterol.

Precautions: As it has cooling effect, patients suffering from cold, cough, asthma, sinusitis should avoid its intake.^[42]

2. **Lashuna (Garlic):** It has **sulphur containing amino acids, peptides & sulphoxides.** Serves as overall health benefits. Its an excellent source of manganese, vitamin B 6, vit C and copper. It decreases the risk of cardiovascular disease (heart attack, coronary artery disease, high blood pressure, atherosclerosis).^[43]

3. **Palandu (Onion):** These are rich in dietary fibres. Studies have shown that **allium and allyl disulfide present in onion have anti mutagenic properties,** rich source of chromium and an antioxidant flavonoids-quercetin.^[44]

Uses: Has Anti-diabetic properties, laboratory studies have also shown its cholesterol lowering activities, it decreases the blood vessel stiffness.

4. **Alook (Potato):** They are the good sources of vit B6, vit c, niacin, pantathonic acid, **carotenoids, flavonoids, and caffeic acid.**

According to US food and drug administration, potassium present in potato, lowers the blood pressure. It is useful in secretion of neurological chemicals(vit-B6) **Hence can be indicated in depression, stress and attention deficit conditions.** Good levels of glucose in potato enhances learning and memory.^[45]

6. SAMSWEDAJA SHAKA

1. Chatraka

Vegetable	Rasa	Guna	Virya	Vipaka	Doshakarma	Pathya	Apathya
1. Chatraka ^[50] Mushroom	Madhura	Guru, Rooksha	Sheeta	Madhura	Krishna Chatraka And Sweta Chatraka –Atyantha Thridosha kara Raktha Chatraka- Svaalpa Dosha Karaka	-	-

1. **Chatraka (mushroom):** Mushrooms are usually **cholesterol free, fat free, gluten free** but provide important nutrients like **selenium, potassium, riboflavin, niacin, vit D,** vit-B.

5. **Moolaka (Raddish):** These are the excellent sources of antioxidants, electrolytes, minerals, vitamins, and dietary fibres. It has an antioxidant compound called **sulforaphane,**

Uses: presence of sulforaphane has proven its role against prostate, breast, colon, ovarian cancers. It has adequate quantity of folates, vit B 6.

Precautions: Goitrogens present in raddish may cause swelling of the thyroid gland, hence should be avoided in thyroid dysfunction.^[46]

6. **Grinjanaka (carrot):** Carrots are mainly composed of water and carbohydrates (starch and sugars, such as sucrose and glucose). Good source of fibres, **pectin is the soluble fibre** present in carrot. Its also a rich source of **biotin, vit A and Vit K, beta carotenes and lutein.**^[47]

Uses: when consumed in raw form it acts as **weight loss friendly food,** it lowers the cholesterol levels and improves eye sight, promotes regular and healthy bowel movements.

7. **Turnips (shalgum):** rich in dietary nitrates and potassium.

Uses: Consumption of this reduces the risk of obesity, DM, heart diseases. Promotes healthy complexion. By absorbing the water in the colon, making bowel movements easier to pass helps in **curing diverticulitis.** The presence of dietary nitrates and **potassium** helps in reducing the blood pressure.^[48]

8. **Chukander (Beetroot):** **Uses:** A study conducted showed the blood pressure lowering activity because of the **presence of nitates.** It increases the oxygenation to brain and hence indicated in **dementia.** Studies on **alpha lipoic acid** have shown decrease in symptoms of peripheral neuropathy and autonomic neuropathy in people with diabetes mellitus. **Choline-** a versatile nutrient present in beetroot induces sleep, helps in muscle movement, learning, memory, aids in transmission of nerve impulses.^[49]

Uses: helpful for nervous system(vit B) Selenium boosts the immunity and good in infertility disorders in men. ergothioneine is the antioxidant present which protects the body cells.^[51]

DISCUSSION

The route of all beings is nothing but food itself. The choice of healthy and nutritious food has become a prime importance in the present era. Age old science explains many nutritious food articles based on its Rasa Panchakas. Either due to extinct species or endangered species of various naturally available fruits and vegetables, man is unable to reach the exact species (medicinal plant) as mentioned in classics or recognize them as the same, hence few vegetables (shakha varga) mentioned in the classics that are being used in day today practice with their nutritive analysis and scientific approach is illustrated in the article.

CONCLUSION

The physical and mental health depends on the food that we eat. The promotion of health and prevention of disease is possible through nutritious food intake. The proper utilization of naturally available food sources like fresh vegetables cures many ailments. Thus the maintenance of the body growth, energy, and health is possible only by proper nutrition, and one of the way is through proper intake of fresh, natural nutritive vegetables.

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