

CHAVANPRASH – A TRADITIONAL NUTRACEUTICAL

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ABSTRACT

Chavanprash is a one of the most popular and commonly used remedy. *Chavanprash* is classified under the category of *Rasayan*, which not only aims at maintaining physique, vigor and vitality but also delay the Ageing process. It is prepared in large quantity as per *Sharangdhar Samhita* by using 50 herbs including with main ingredient as *Amala* (*Embelica officinalis*). *Chavanprash* is being used long before the clinical importance of Nutraceuticals was known. Therefore present study is selected to evaluate its true nutritional value by quantifying percentage of Carbohydrates, Proteins, Fats and Sodium and vitamin C presents in *Chavanprash* and to explore its role as Nutraceutical food. Carbohydrate, protein, fat are the major source of calories required by body daily. 100 g of *Chavanprash* contains 3.80 g of Fats, 1.08 g of

Proteins, 79.12 g of Carbohydrates, 52mg of Sodium, 10.29 mg of Vit. C and provides 355Kcal.

KEYWORDS: Rasayan, Nutraceuticals, Chavanprash, Vit. C, Sodium.

INTRODUCTION

A Nutraceutical is any substance considered as a food, or its part which, in addition to its normal nutritional value provides health benefits including the prevention of disease or promotion of health.^[1] The body with the required amount of vitamins, fats, proteins, carbohydrates, etc. needed for its healthy survival. In present era, consumption of junk food, stress has increased manifold because of urbanization, industrialization, hectic schedule and changing culture, leading to decreased quality and quantity of nutrients.^[2] Due to these altered dietary habits population is gradually suffering from many metabolic and degenerative diseases, early onset of ageing and development of lifestyle disorders for eg. diabetes, which is leading to the popularity or we can say demand of Neutaraceutics.

Ayurveda is considered holistic since it considers body, mind, and spirit as a whole unit to treat. It also includes concept of rejuvenation. Nutraceuticals is not a new concept, its roots can be traced in Ayurveda, our *acharyas* already has known about this.^[3] In Ayurveda the importance of particular diet in prevention and treatment of disease was well known. For ages people in India because of their cultural beliefs and experiences herbs and herbal formulation were a part of their daily food supplements and that to be according *Vaya* (age), *Desha* (place), *Bala* (strength), *Ritu* (season) etc.

According to *Acharya susrut*, therapy that helps to retard ageing and disease is called as *Rasayan*. *Rasayanas* are known to give benefits like *Deerghaayu* (long life), *Smruti* (memory power), *Medha* (Grasping capacity), *Aarogya*(health), *Tarun vaya* (youth), etc. as described by *Acharya Charak*.^[4] According to *Acharya susrut*, therapy that helps to retard ageing and disease is called as *Rasayan*. Most popularly used *Rasayana* of Ayurveda is *Chavanprasha*. Therefore study has been conducted to evaluate its nutritional value by quantifying carbohydrates, proteins, fats, sodium and Vit. C.

Chavanprash is being used long before the clinical importance of Vitamins Minerals and Antioxidants was known. *Chavanprash* is prepared by incorporating around 50 herbs including *Amala*, *Goghrut*, *Honey* etc. *Acharya Charak* has described benefits of *Chavanprash* as *Medhya* (Grasping capacity), *Smruti* (capability to remember), *kanti* (glow) *Aayuprakarsha* (longevity) *Balaindriyanam* (maintain strength of sense and motor organ), *Navyovnasya* (remove sign of ageing).^[5]

AIM AND OBJECTIVE

1. To Evaluate Nutritional Value of *Chavanprash*.
2. To explore its Important role as Neutraceutical in modern era.

MATERIALS AND METHODS

Preparation of *Chavanprash*: *Chavanprash* is prepared as per *Sharangdhara Samhita*.^[6] All raw materials are purchased from local market of Nanded and *Chavanprash* is prepared in our department of Rasashastra and Bhaishjya Kalpana. All *kwath* drugs (mentioned in table 1) were made into coarse powder and were soaked overnight. Then *kwath* is prepared by adding 16 times (~70L) of water and reducing it to 1/8 (~10L). *Amala* (25 kg) were suspended in *kwath* in *pottali* for *swedan* (steaming). The pulp is prepared by rubbing the steamed *Amala* on net. Pulp is fried in *Goghrut* (1400 ml) till it become honey coloured. The *kwath*, *sarkara* (37.5 kg) and fried pulp was heated till desired consistency of *paka* appeared. Then fine powder (mentioned in table 2) is mixed in the *paka* when it comes to lukewarm stage. Honey is added lastly when mixture attains room temperature.

Table No. 1: Kwath dravya (each 250 gms).

Sr.	Name of drug (Latin name)	Sr.	Name of drug (Latin name)
1.	<i>Bilva</i> (<i>Aegle marmelos</i> corr.)	20*	<i>Vrudhi</i> = <i>Varahikanda</i>
2.	<i>Patla</i> (<i>Stereospermum suaveolens</i>)	21	<i>Shati</i> (<i>Hedychium spicatum</i> BuchHam)
3.	<i>Arani</i> (<i>Premna mucronata</i> Roxb.)	22*	<i>Jivak</i> = <i>Vidarikand</i>
4.	<i>Gambhari</i> (<i>Gmelina arborea</i> Linn.)	23*	<i>Rhishbhak</i> = <i>Vidarikanda</i> (<i>Pueraria tuberosa</i> D.C.)
5.	<i>Sonpatha</i> (<i>Oroxylum indicum</i> Vent.)	24	<i>Nagarmotha</i> (<i>Cyperus rotundus</i> Linn.)
6.	<i>Gokshur</i> (<i>Tribulus terrestris</i> Linn.)	25	<i>Pushkar mula</i> (<i>Inula racemosa</i> Hook. F.)
7.	<i>Shalparni</i> (<i>Desmodium gangeticum</i> DC.)	26	<i>Kaknasa</i> (<i>Martynia Annu</i> L.)
8.	<i>Prushnparni</i> (<i>Uraria picta</i> Desv.)	27	<i>Mudagparni</i> (<i>Phaseolus trilobus</i> Ait.)
9.	<i>Bruhati</i> (<i>Solanum indicum</i> Linn.)	28	<i>Mashaparni</i> (<i>Teramnus labialis</i> Spreng.)
10.	<i>Kantakari</i> (<i>Solanum surattense</i> Burm. F.)	29	<i>Vidarikand</i> (<i>Pueraria tuberosa</i> D.C.)
11.	<i>Pipalli</i> (<i>Piper longum</i> Linn.)	30	<i>Punarnava</i> (<i>Boerhavia diffusa</i> Linn.)
12.	<i>Shrungi</i> (<i>Pistacia integerrima</i> Stewart ex Brabdis)	31*	<i>Kakoli</i> = <i>Ashvagandha</i> (<i>Withania somnifera</i> Linn.)
13.	<i>Manuka</i> (<i>Vitis vinifera</i> Linn.)	32*	<i>Kshirkakoli</i> = <i>Ashvagandha</i>
14.	<i>Gudvel</i> (<i>Tinospora cordifolia</i> D.C.)	33	<i>Kamal</i> (<i>Nelumbo nucifera</i> Gaertn)
15.	<i>Hirda</i> (<i>Terminalia chebula</i> Retz.)	34*	<i>Meda</i> = <i>Shatavari</i> (<i>Asparagus racemosus</i> Wild)
16.	<i>Bala</i> (<i>Sida cordifolia</i> Linn.)	35*	<i>Mahameda</i> = <i>Shatavari</i>
17.	<i>Bhumyamalki</i> (<i>Phyllanthus urinaria</i> Linn.)	36	<i>Sukshma ela</i> (<i>Elettaria cardamomum</i> Maton.)
18.	<i>Vasa</i> (<i>Adhatoda vasica</i> Nees)	37	<i>Aagru</i> (<i>Aqualaria agollacha</i> Roxb.)
19*	<i>Rhidhi</i> = <i>Varahikanda</i> (<i>Dioscorea bulbifera</i> D. sativa.)	38	<i>Chandan</i> (<i>Santalum album</i> Linn.)

**Pratinidhi dravya* are used in place of *Astavarga dravya*.^[7]

Table No. 2: Prakshep dravya.

Sr. No.	Name of dravya	Quantity
1	<i>Pipalli</i>	400 gms
2	<i>Vansha lochan</i> (<i>Bambusa arundinacea</i> Wild.)	800 gms
3	<i>Twak</i> (<i>Cinnamomum zeylanicum</i> Breyn)	37.5 gm each
4	<i>Ela</i>	
5	<i>Patrak</i> (<i>Abies webbiana</i> Lindle)	
6	<i>Nagkeshar</i> (<i>Colopfiyllum inophyllum</i> Linn.)	
7	Honey	1200 ml

Test Conducted: The following test were conducted on *Chavanprash*.

Estimation of Carbohydrate^[8]: Test solution 10 ml of sample taken in volumetric flask and 20 ml of 2N H₂SO₄ & 20 ml of water was added to it; hydrolyzed for 2 hrs. by boiling on water bath. After cooling, neutralized with 1N NaOH and made it 200 ml with water.

Standard solution (Dextrose solution)- 250 mg of dextrose anhydrous dissolved in water to make the volume 100 ml.

Titration- 25 ml of Benedict's solution was taken, 1-2 gm sodium bicarbonate added and titrated with test and standard solutions respectively and the reading was noted.

$$\% \text{ carbohydrates} = \frac{\text{Std reading} \times 2.5 \times 200 \times 100}{\text{Test reading} \times \text{Test wt.} \times 1000}$$

Estimation of Protein^[9]: After gone through digestion and distillation procedures, titration of samples was carried out. 2-3 drops of phenolphthalein indicator was added to sample and titrated against 0.1N NaOH solution till the pink color obtained. Burette reading was noted.

Conversion factor- 1 ml of 0.1N NH₃ 0.0014 g of Nitrogen

$$\% \text{ of protein} = \% \text{ of N} \times 6.25$$

Estimation of Fat^[10]: Dry round bottom flask of 250 ml capacity was taken with 2-3 porcelain beads and weight it correctly. Now setup the soxhlet assembly with a water condenser on the pre weighted round bottom flask. Add 3 gram of sample in a thimble and place a fat free cotton wool on the mouth of thimble. Place the thimble in soxhlet apparatus at 60-80°C Petroleum ether up to 1 complete siphon. Gently heat the R.B. flask and carry out the process till 5-6 siphon complete so that fat from the sample is completely transferred to R.B. flask. Now disassemble the assembly and place R.B. flask in oven at 105 degree for 3-4 hours so that ether completely get evaporate.

Calculation of Energy^[11]: Multiply grams of carbohydrate in the food by four calories per gram. Multiply grams of protein by four calories per gram. Multiply grams of fat in the food by 9 calories per gram. Add the energy from carbohydrate, protein and fat.

Sodium analysis by flame photometry^[12]: Determination of sodium was done by flame photometry method. Firstly photometer was calibrated using standard solutions, then diluted sample solution was allowed to pass through photometer. When a particular colour of flame appeared, galvanometer reading was noted. Same procedure was repeated during both samples. From the above values, sodium readings in the undiluted samples were calculated.

Vitamin C estimation by Titration method^[13]: Vitamin C concentration in *Chavanprash* sample was determined by redox titration using iodine solution. Standard ascorbic acid solution, starch solution and iodine solution were made. Firstly, volume of iodine solution was determined required for redox titration of standard ascorbic acid solution. After achieving standard value, Chavanprash sample was diluted in specific proportion and 1-2 ml of starch solution was added to it as an indicator; then this mixture was titrated against iodine solution till the blackish purple color acquired by the solution. Volume of iodine solution required for titration was noted. Thus, quantity of ascorbic acid in the sample was calculated by using above standard values of iodine solution required for titrating the standard ascorbic acid.

OBSERVATIONS AND RESULT

1. Analytical Report.

Test	Result
Appearance	Semi solid
Colour	Dark blakish brown
Odour	Characteristic
Taste	Sweet & astringent
Loss on drying	11.60%
ASH	17.35%
Water soluble extractives	62.40%
WT/ML (1% solution)	3.4%
pH (5% solution)	2.93%
Refractive index	1.339
Saponification value	4670
Reduced sugar	86.10%
Total fiber	3.25%
Total tannin	1.48%

2. Phytochemical Analysis.

Characters	Test	Results
Alkaloids	Dragendorff's test	+ve
Amino acids	Ninhydrin test	+ve
Carbohydrates	Anthrone test	+ve
Fixed oils and fats	Gravimetric Method	+ve
Saponins	Hemolytic Method	+ve
Glycosides	Anisaldehyde test	+ve
Phenolic	Folin- Denis test	+ve
Phytosterol	Salkowski test	+ve
Flavonoids	Shinoda	+ve

3. Nutritional Value.

Sr. No.	Testing parameter	Results
1.	Fat	3.80%
2.	Protein	1.08%
3.	Carbohydrate	79.12%
4.	Sodium	52 mg/100gm
5.	Vitamin C	10.29 mg /100 gm
6.	Total energy	355 kcal/100 gm

DISCUSSION

Life style disorders are result of an inappropriate food habits, physical inactivity, and disturbed biological clock. A report prepared by WHO and world economic forum says India will incur an accumulated loss of \$ 236.6 billion on account of unhealthy lifestyle and faulty diet.^[14]

Vitamins are essential nutrients that are required for various biochemical and physiological processes in the body. It is well known that most of the vitamins cannot be synthesized (in sufficient amount) in the body hence their supplementation in diet is essential.^[15]

Vit. C exists in reduced (ascorbate) and oxidized forms (as dehydroascorbic acid) which are easily inter convertible and biologically active and acts as important antioxidants.^[16] Vit. C is required for normal physiological functions like collagen formation, which provides supportive matrix for the blood vessels and connective tissues and for bones and cartilages. It plays important role in wound healing and maintenance of healthy gums.^[17] *Amala* is one of the richest sources of vit C both in fresh and dry form. Presence of Vit. C (10.29%) in *Chavanprash* indicates that protracted boiling does not affect the Vit. C percentage in *amala*. The same is also emphasized in article written by Milind Parle.^[18]

Sodium is essential for cellular homeostasis and physiological functions. It is found in all the body fluids. Its role is important in maintaining ECF volume because of its main osmotic action and is equally important for excitability of muscle and nerve cells and for the transportation of nutrients and substrate through plasma membrane.^[19]

Intracellular and extracellular oxidative stress causes skin aging; use of antioxidants is an effective approach to prevent its symptoms. Interest in relationship between diet and ageing is growing. Research has shown that dietary calorie restriction and some antioxidants extend lifespan in various ageing models. On the one hand oxygen is essential to aerobic organisms because it is a final electron acceptor in mitochondria. On the other hand oxygen is harmful because it can continuously generate reactive oxygen species (ROS), which are believed to be a factor causing ageing of an organism. Dietary antioxidants including ascorbic acid, Vit. A, Vit. C is able to scavenge ROS in cells and therefore theoretically can expand the lifespan of organism.^[20]

Role of *Chavanprash*: Daily requirement of total energy in adult is around 2400 kcal to 3500 kcal out of which 10 to 20% should be obtained from fat, 50 to 70% from carbohydrates and rest from protein.^[21] 100 g of *Chavanprash* gives 79.12 g of carbohydrates, 3.80 g of fats, 1.08 g of protein i.e. total 355 kcal.

Dose of *Chavanprash* is 1 pala (40 g) so it provides around 142 kcal when consumed in the morning. Maximum energy is from carbohydrates so it gives instant energy which is required in the morning. Protein content is not much so it doesn't act as body building.

Average daily consumption of 2400 calories should be divided as 300- 400 calories for breakfast and 500-700 calories for lunch and dinner as suggested by nutrition experts.^[22] Recommended dose of *Chavanprash* in the morning is such that it doesn't affect the intake of meal.^[23] 100 gm of *Chavanprash* provides around 355kcal which is equal to quantity of energy gained through breakfast but doesn't affect the lunch. It also provides around 10.29 mg of vit c i.e ¼ of daily requirement. As dose of avaleh is 1 pala i.e 40 gms so 40-100 gms of *Chavanprash* can be consumed without affecting the next meal.

Daily requirement of sodium is 5gm¹⁸ per day and of vitamin c is 40 mg^[16] per day. 100 gms of *Chavanprash* may provides 52 mg of sodium, 10.29 mg of vit. C to body. Consumption of 40 gms of *Chavanprash* provides approximately 20.8 mg of sodium and 4.12 mg of vit.

which plays very important role in body as *Rasayan*. Importance of Vit. C and sodium is already mentioned above. Alkaloids, Amino acids, Fixed oils and fats, Saponins, Glycosides, Phenolic, Phytosterol, Flavonoids from other herbs present in *Chavanprash* may play important role in prevention of diseases and maintenance of normal physiology.

Ingredients of *Chavanprash* such as *Nagkeshar*, *patrak*, *Ela*, *Twak*, *Patla*, *Gambhari*, *Bilva*, *Agru*, *Shalparni*, *Pushkarmul*, *Nagarmotha*, *Kaknasa*, *Vidarikanda*, helps in correcting digestive system. These herbs may helpful in gastritis, peptic ulcer and intestinal cramping.^[18]

Pippali, *Kantakari*, *Bhumyamalaki*, *Shrungi*, *Vasa*, *Pushkarmul*, *Prishnparni*, *Arni*, *Shalparni*, *Til Oil*, and *Amala* helps in nourishing the respiratory system.^[18]

Nagkeshar, *Gudvel*, *Nagarmotha*, *Vidarikanda*, *Agaru*, *Ashwagandha*, *Shalparni*, *Prishnparni*, And *Amala* helps to sharpen the CNS several of this ingredient posses antioxidant and antinflammatory properties. *Chavanprash* nourishes the cells of brain, promotes co-ordination among various body parts, and improves memory and increases learning ability, storage, recall and intellect. It has bad calming effects on CNS, thereby reducing anxiety and stress induced psychiatric problems and imparts sound sleep.^[18]

It lowers cholesterol level by improving blood lipid profile. *Amala*, *Kanwal*, *Punarnava*, *Pushkarmool*, *Kachur*, *Vasa*, *Bala*, *Shalparni*, *Prishnaparni*, *Brihati*, And *Gokshur* helps in streamlining the CVS.^[18] *Chavanprash* strengthens immunity and facilitates healing process. it comprises ingredients possessing antioxidants, anticarcinogenic and anti mutagenic activities.^[18]

CONCLUSION

Neutraceuticals is the demand of present era due to faulty lifestyle, stress and diet in modern society. The medicines recommended under the *Rasayanas* especially *Avaleha* formulations may be used as neutraceuticals in the present era. *Chavanprash* provides the basic nutrition for body i.e. 355 kcal of energy which is equal to calories obtained through breakfast. *Chavanprash* also prevents from various diseases and conditions.

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