

The Nutritional Aspect of Milk According to its Source-A Comparative Study

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Abstract

Original Research Article

Milk is a nutritious food consumed all over the world. Milk is considered as healthy and complete food by all health disciplines. Ayurveda science describes the properties of 8 types of milk and their therapeutic uses. This study is planned to compare the views of modern nutritional aspect and ayurveda view about the properties and uses of the 5 types of milk namely cow, buffalo, human, goat and camel. The properties of these types of milk quoted in classic ayurveda texts are studied thoroughly. The properties of this milk according to modern nutritional science is compiled and studied. The observation states that both the sciences have almost same opinions regarding the digestion, metabolism of the 5 types of milk. The therapeutic uses of this milk, as proposed by ayurveda, can be justified by modern nutritional aspects. Thus ancient indian wisdom is proven its golden standards.

Keywords: Aspect of Milk, Nutritional Aspect of Milk.

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INTRODUCTION

Milk is the healthy food which is consumed worldwide. The references of milk consumption can be traced back to Vedic era. In ayurvedic texts cow milk is said to have superior qualities. It gives nourishment to body entities, imparts intellect and improves complexion. Also milk is aphrodisiac in nature and helps to increase sperm count.

Milk is advised to all age groups from newborn infant to old age people. Human milk is first and foremost nutrition to newborn infant. Hence, it is said that milk is 'Satmya' or can get assimilated easily in the body.

T. Longvah, R. Ananthan, K. Bhaskarachary, K. Venkaiah [1]. Milk is the source of carbohydrate, fat, protein, vitamin and rich source of calcium, Vit A, Vit B12 and B 2. For the vegetarians, milk is the only source of vitamin B 12. Hence consumption of milk is very important in making one's food a balanced diet. It is the prime food for infants, children and pregnant women.

Ayurved dipika vyakhya by Chakrapani [2]. Milk overcomes fatigue, giddiness, intoxication, poverty, respiratory disorders, thirst and hunger, chronic fever, painful urination and bleeding disorders.

Nibandhasangraha vyakhya [3] Milk is broadly described in ayurveda text under 'Kshirvarga' which includes milk of a cow, a buffalo, a goat, a human, a camel, an elephant and a horse. All these types impart different properties and have specific therapeutic uses.

Ayurveda mentions the properties of milk and its effect on health according to the colour of the cow. Ayurveda mentions various utensils for the storage and boiling of milk.

In present conditions, onset of many diseases has been tremendously increased. Food and water are the basic needs which cannot be avoided. Many of the diseases have their roots in consumption of inappropriate food and wrong food habits. There is a very little or no awareness among the people about this. Wrong food habits leads to indigestion and food incompatibility which further leads to formation of undigested part in the body called 'Ama'. This further leads to vitiation of

doshas and malnourishment of dhatus. These vitiated doshas get stucked in the dhatu with 'Khavaigunya' or structural deformity and leads to many diseases.

Thus one should carefully observe the food he eats and should avoid incompatible food. Today, there is a tremendous change in food habits due to embracing of western culture, occupational needs, changes in lifestyle etc.

We can see that the milk is consumed widely along with the non-recommended food items. This research paper discuss about ayurvedic approach of milk. This study focuses on properties of 5 types of milk and their correlation with nutritional science

AIMS AND OBJECTIVES

- To observe and compare the nutritional properties of different types of milk according to ayurveda and modern nutritional science.

MATERIAL AND METHODS

For the study, the properties of 5 types of milk from ayurveda perspective is compiled from classical ayurveda texts like charak samhita, sushrut samhita, vagbhat samhita and bhojan kutuhal.

The nutritional values of all these types of milk are compiled according to modern aspect. The gunas of the milk are compared with the modern nutritional properties.

Properties of cow milk

Cow milk-charak su 27

Ayurved dipika vyakhya [4] Cow milk is sweet in taste, heavy to digest, cold in potency, acts as rasayan, or rejuvenator, alleviator of vata and pitta dosha.

Ayurved dipika vyakhya [5] According to modern science, fat constitute of the cow milk is 3-4 %, protein about 3-5 %, and lactose 5%. Cow milk is a very good source of protein and its protein content is more than buffalo's milk. Its sodium content is also fairly high.

Buffalo milk-

Soliman GZ [6] it is very heavy to digest and maha abhisyandi or causes effusions or oozing of liquids in the body. It is cold in potency. It stimulates sleep and can be consumed by people having good digestive capacity.

Soliman GZ [7] According to nutritional science, buffalo milk contains higher level of fat lactose, protein, ash and calcium, and Vitamin A and C and lower level of vitamin E, riboflavin and cholesterol and absence of carotene. It also has a blue green pigment (biliverdin) as well as bioactive pentasaccharides and gangliosides which is absent in cow milk. The fat globules are larger

and less stable than cow milk. Also the fat has slightly higher levels of saturated fatty acids. Its protein and sodium content is low than cow milk.

Human

Jeness R [8] Human milk is sweet in taste, cold in potency, light to digest, it is wholesome food for newborn as it gives nourishment and vividness to him.

Kula JT, Tegegne D [9] According to modern nutritional aspect human milk contains 4.2 % of fats, which is higher than goat or cow milk. It has long chain polyunsaturated fatty acids DHA and ARA. These are important components of nervous system and eye. Human milk contains oligosaccharides, which blocks bacterial attachment to the intestinal surface and reduces risk of gastro intestinal infections. It contains far less proteins than cow and goat milk but these proteins are easier to digest. -It can be used for nasya and ashyotan or eye drops. Thus it prevents any harm to baby's immature kidneys from an overload of protein wastes.

Also it is less allergenic due to the lack of beta-lactoglobulin, an offending protein for babies who are intolerant to cow milk (so satmya). It also contains enzymes, growth factors and immunoglobulins.

Goat

Ayurved dipika vyakhya [10]. It is light to digest and with cold potency, it is useful in treatment of bleeding disorders, diarrhea, chronic bronchitis, and fever. It triggers the digestive fire and thus useful in the treatment of *shosha* (tuberculosis).

Ayurved dipika vyakhya [11] Goat milk has a similar composition of cow milk. It has antioxidant, antimicrobial properties. It contains higher carotene having anticancer activity.

Ayurved dipika vyakhya [12]. It is more digestible because of its small sized globules, uniform proteins, fat distribution and less lactose. Goat milk is alkaline in nature hence good for the people having acidity. Cow milk is slightly acidic in nature. It has less casein than cow milk hence it is less allergenic. It provides healthy and balanced diet to children who are allergic to cow milk. Goat milk contains more calcium, Vit B 6, Vitamin A, niacin, copper, antioxidant selenium. It is an excellent source of phosphorus and potassium. These are essential minerals in the body to maintain good health, prevent many diseases like colon cancer, maintain normal blood pressure, prevent muscle cramps, prevent formation of blood clots inside blood vessels internal bleeding in the tissues- and make the bones healthy.

Camel

Jilo K and Tegegne D [4]. Camel milk is slightly salty in taste, light to digest, good for patients

suffering from ascitis, worm or any other infective focus, swelling, abdominal distention and constipation. It creates dryness in body than cow or buffalo milk.

Jilo K and Tagine D [4]. According to modern nutritional aspect, it has similar composition as that of cow milk but it is saltier. It has 3 times more Vitamin C, than cow milk. So it is vital source of vitamin C in the arid and semi-arid areas. It is also rich in unsaturated fatty acids and vit B. It has an opaque white color, and has a faint sweetish odor, and sharp taste its density and pH both are lower than cow milk. Camel milk has been acknowledged for a long time in different part of the world to provide potential treatment for dropsy, jaundice, tuberculosis, and asthma.

It is rich in proteins like lysozyme, lactoferrin, lactoperoxidase, GRP, IgA, and IgG which exerts antibacterial, antiviral, antifungal and antiparasitic activity, immunological properties, anti-tumor activity.

Camel milk contains large amount of Insulin i.e. 150 U/ml. Cow and goat milk also contain insulin but it gets degraded in the acidic environment of stomach. But in the camel milk, it is present in micelles and gets protected from acid of upper digestive tract. It is encapsulated in nano particles which facilitate its absorption and easy passing to blood stream.

DISCUSSION

The properties of different types of milk described by Acharya Charak and Acharya Sushruta are compared with the modern nutritional aspect.

Cow milk- Cow Milk

Cow milk is rich in Sodium and protein than buffalo milk. Sodium is essential to maintain water balance in and around cell. Also it is important for proper nervous muscular function. It may cause weakness, fatigue, Headache, nausea, muscle cramps, confusion.

Proteins are building blocks in the body. They are essential to maintain structure in the body system and also necessary in various functions. Various immunoglobins essential for maintaining and improving the immune system are made from proteins. Thus protein maintains your immune power.

This function of cow milk is already described in ancient ayurvedic literature, it is Rasayana or having rejuvenating capacity which revitalizes the body and performs wear and tear function in the body very efficiently. Also it prevents body from frequent sickness as it improves immunity.

Cow milk vivifies the body. It gives liveliness or Vividness. It is very clear that mother milk is the first and the foremost food for a new born baby but in absence

or lack of shortage at mother milk, cow milk is provided to such new born to give them life.

The properties of Cow milk mentioned in ancient ayurveda literature is in accordance with modern Nutritional facts of Cow milk.

Buffalo milk

Buffalo milk is heavier to digest than cow milk. This proves true on the basis of modern nutrition as according to it, buffalo milk has higher fat than cow milk. The fat globules are larger and less stable than cow milk. Also the fat has slightly higher levels of saturated fatty acids.

Fat takes more time for digestion than carbohydrate and proteins. Thus the Guru or the property of heaviness is proven on the basis of nutritional science.

Camel milk

Camel milk is said to act as Krimighna and Gulmanashak. It is well proved by nutritional science as it says that camel milk is rich in proteins like lysozyme, lactoferrin, lactoperoxidase, GRP, IgA, and IgG which exerts antibacterial, antiviral, antifungal and antiparasitic activity, immunological properties, anti-tumor activity.

High Vitamin C content as in Camel milk is essential for repairing the blood vessels. It can prevent the internal rupture of blood vessels and thus prevent the oozing of plasma in intercellular spaces which leads to edema, ascitis and other internal bleeding. This is in accordance with ayurveda opinion that camel milk is good for curing Shosha (edema), Udar (ascitis) and Arsha (piles-bleeding or non-bleeding)

Goat milk

Goat is an animal with thin body and light weight. So the qualities of milk are laghu or light to digest and cold potency. It is useful in the treatment of shosha. Shosha is a disease in which there is dhatukshaya or degeneration of tissues. It resembles with Tuberculosis which a contagious disease is caused by the bacteria M. Tuberculi. Modern nutritional science describes that goat milk has antimicrobial properties also it is rich in the minerals like calcium, phosphorus, potassium, magnesium. These are essential to maintain health of body tissues and prevent degeneration. Thus consumption of goat milk avoids degenerative changes or Dhatukshaya, Boosts immunity, and reduces the susceptibility for the infection and also helps in curing the disease. The minerals also prevent the internal clotting of the blood.

Laghu is an important feature of goat milk. It contains small sized globules, uniform protein, fat distribution and less lactose. Thus it is easy to digest and can be used in Atisaar and jwara.

It can be used in the children having allergy to cow milk. It is useful in the treatment of ulcers due to its strong acid buffering activity. Thus can be used to cure ulcers of GI tract, bleeding ulcers.

Human milk

It is a complete food for newborn and contains all types of nutrients, It contains more fat than goat or cow milk thus it provides snehan or oiliness in the body which is very necessary function for the growth. It has less protein than cow milk, but the proteins are easier to digest.

It contains polyunsaturated fatty acids like DHA and ARA which is essential and actively taken up by nervous tissue and eyes. This fact proves the wisdom classical ayurveda texts which describes that goat milk is good for the treatment of eye in the form of Ashyotan. Also good for Nasya which directly acts on Mastulung or brain (su chi 40-40).

CONCLUSIONS

The ayurveda view regarding the use of these types of milk has proven on the basis of modern Nutritional science. Ancient ayurveda wisdom proves its golden standards on the basis of modern parameters. This accentuates on the shashwat or eternal nature of ayurveda.

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