



Agri Articles

(e-Magazine for Agricultural Articles)

Volume: 04, Issue: 03 (MAY-JUNE, 2024)

Available online at <http://www.agriarticles.com>

© Agri Articles, ISSN: 2582-9882

Tampering With the Nutrition of Milk

(*Dr. Shanker Suwan Singh)

Assistant Professor, Department of Food Science and Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj- 211007 (Uttar Pradesh)

*Corresponding Author's email: shanranu80@gmail.com

Milk is synonymous with nutrition. Milk provides nutrition to the world. In the process of nutrition, organisms use nutrients. Diet is required to live. Diet or food should be pure, nutritious and fresh. The main objectives of diet or food are – 1. To provide energy or power to the body. 2. To rebuild cells or tissues in the body. 3. To increase the immunity of the body. Health is closely related to diet. If nutrients are not present in our food in proper quantity, then the body will become ill. Carbohydrates, proteins, fats, vitamins, minerals-salts and water are the main nutrients. Nutrition is a process that provides nutrients to the body. Nutrition refers to the right mixture of nutrients. Good nutrition is a sign of a healthy body. Milk is a food in which all the nutrients are found in balanced quantities. French scientist Lavoisier is considered the father of nutrition. He discovered metabolism in 1770 AD. He demonstrated that energy is obtained from food due to its oxidation. Milk provides instant energy to the body. Amino acids and fatty acids are present in milk. Milk is a complete diet. Life is incomplete without milk. Milk is an opaque white liquid which is produced by the mammary glands of females. A newborn baby depends on milk until it is unable to consume other substances. The components present in milk are - water, solids, fat, lactose, protein, minerals, fat-free solids. If we talk about the water present in milk, the highest amount of water is found in donkey milk at 91.5%, mare at 90.1%, human at 87.4%, cow at 87.2%, camel at 86.5%, goat at 86.9%. Milk contains calcium, magnesium, zinc, phosphorus, iodine, iron, potassium, folates, vitamin A, vitamin D, riboflavin, vitamin B-12, protein etc. Cow's milk contains 3.14 milligrams of cholesterol per gram. Cow's milk is thin. Which is easily digested in the body. No single food item supplies everyone, but milk supplies almost everyone. The theme of World Milk Day in the year 2024 is - The important role played by dairy in providing quality nutrition to nourish the world. World Milk Day was celebrated with great enthusiasm with this objective or theme. Cow is considered worshipful in Hinduism. Cow is worshipped, milk is a complete diet in itself. Panchagavya is made from cow's milk, curd, ghee, urine and cow dung. These five things related to cow have special significance in Hinduism. Diseases are cured by consuming medicines made from Panchagavya. Products made from Panchagavya are completely chemical free and are beneficial for health. Sattva particles are continuously emitted from the body of cow; therefore medicines and products made from Panchagavya are Satvik. Their use gives Satvikta. Satvikta develops virtues. It gives good sense. It reduces stress and improves memory. Milk is a factor of divinity. Therefore it is called Amrit. Just by the touch of a cow, stress and blood flow in the body are relieved. The body is formed by the combination of five elements of Panchabhuta, fire, air, sky, water and earth. The body is formed from Panchabhuta and Panchagavya is made to protect the body. Panchagavya increases the immunity. Panchagavya and Panchabhuta are



proportional to each other. That is, both of them represent each other. Milk, curd, ghee, cow urine and cow dung (components of Panchagavya) represent fire, air, sky, water and earth (components of Panchabhuta) respectively. Fire, air, sky, water and earth represent bile, vata, void, phlegm and soil (paste) respectively. Void is stress reliever. Void is a symbol of peace. It means that milk destroys bile in the body. Curd removes air disorders. Ghee destroys stress. When there is a balance of vata and bile in the body, then the body develops immunity. A healthy body is a sign of being stress free. Cow urine represents water. Water is a symbol of phlegm. Therefore, cow urine is a phlegm reliever. It maintains the balance of phlegm in the body. Due to which the respiratory process remains healthy. Cow urine eliminates poison in the body. Cow dung represents earth. Earth is a symbol of soil (paste). If cow dung is applied in the house, then positivity increases in the house. In old times, cow dung was applied on the threshold of the house. Cow dung doubles the power of soil. Nowadays, the practice of applying clay/cow dung paste is used to keep the body healthy. The use of clay pots has increased. The use of cow dung cakes has increased. Cow dung has antibacterial properties. The use of clay pots is the best for drinking water. This Panchagavya provides nutrition to our body. Milk derivatives such as ghee, curd, buttermilk, cheese, lassi etc. increase the importance of dairy. Cow milk derivatives are symbols of nutrition. When milk from the cowshed goes to the dairy industries, the number of milk derivatives increases there. Milk is processed in the dairy industries and put into the market for a long time. Due to which the shelf life of processed milk increases. This prevents the milk from getting spoiled. If there are no cowsheds, then it is impossible to have dairy industries. Milk industries are running from cowsheds. The state governments have brought many schemes for proper maintenance of cowsheds and increasing their number. Proper arrangements have been made to give loans through these schemes. People will get self-employment opportunities through these schemes. Self-employment is a symbol of self-reliance. Self-reliance shows self-respect. Self-respect is the mother of independence. It is futile to imagine milk industries without cowsheds. It is futile to imagine milk products and their maintenance without milk industries. The quality check of these products proves the quality nutrition of the products. If the health of cows in the cowshed is good, then it is natural that the quality of milk will also be full of nutrition. Special care has to be taken to ensure that the milk is not contaminated. Contaminated milk is a symbol of contaminated lifestyle. Contaminated milk is just white poison. Pure milk is Amrit. The quality of a substance or food is its suitability for use. The quality of a food is when it conforms to its special characteristics. For example, the special characteristic of sour curd is sourness. Therefore, sour curd conforming to its special characteristics proves the quality of curd. Similarly, milk contains 87.7% water, 4.9% lactose (carbohydrate), 3.4% fat, 3.3% protein and 0.7% minerals. These are its special characteristics. If milk conforms to its special characteristics, then it is a symbol of quality nutrition. Nowadays, it is seen that milkmen generally mix water in milk and distribute it from house to house. This is well known. The quantity of milk increases by mixing water in milk. Despite this, people generally believe that milk mixed with water is not contaminated. Whereas, the fat content of milk decreases when water is mixed in milk. Water mixed from an external source also contaminates milk. This reduces the quality of milk. The thickness of milk (fat) decreases on adding water, so to increase its thickness (fat), the dairy industry adds urea to milk. Urea is an organic compound. Its colour is white and it is used in the production of crops. It is an odourless, poisonous and tasteless chemical. Adding it to milk does not change the colour of milk. Adding it thickens the milk. It is used to increase the fat content in milk. This chemical has many serious disadvantages. It can damage your intestines and harm the digestive system. Keep in mind that drinking adulterated milk can cause serious diseases like kidney disease, heart diseases, organ damage, poor vision and cancer. Urea weakens the strength of milk. A substance called melamine is added to increase the amount of protein in

milk. Melamine is a type of marble stone powder. People are getting kidney problems by drinking melamine-containing milk. Nowadays, the number of kidney patients has increased a lot. A chemical called formalin is added to milk to make it last longer. This increases the shelf life of milk. That is, milk can be kept for a longer time. People are getting skin related diseases and fatal diseases like cancer due to consumption of milk containing formalin. Starch is another common adulterant found in milk. Starch is added to increase the density of milk. It also helps in preventing the detection of external water added to milk. It can cause diarrhea. Excess starch accumulation in the body increases the risk of diseases like diabetes. Detergent is usually used to prevent milk from curdling and to increase its shelf life (to keep it for a long time). The use of detergent (washing powder) in milk causes many infections and gastrointestinal complications. Therefore, it is very important to check whether your milk is adulterated with detergent or not. You can check these adulterations in the following way-

Check for urea in milk- Put one spoon of milk in a test tube. Add half a teaspoon of soybean or pigeon pea powder to it. Mix the mixture well. After 5 minutes, put red litmus paper in the test tube. Remove the paper after half a minute. If the color of the red litmus paper changes, that is, it becomes blue, then understand that poisonous urea has been mixed in the milk.

Testing of water in milk - Lactometer is a scientific instrument. Lactometer is an instrument to measure the purity of milk. This instrument was invented by Dickas of Liverpool. It is a small instrument made of glass. Through this, the purity and impurity of milk is determined on the basis of the density of milk. Through this instrument, it can be easily detected whether water has been mixed in the milk or not. A sample of milk is taken to measure the purity of milk. After this, the lactometer is dipped in the milk and the reading is taken on the instrument. Generally, the reading of pure milk is 32. The amount of water in milk is 87 percent. Due to this, there is a possibility of adding more water to it. Taking advantage of the liquidity of milk, some adulterators add water to it. Due to this, the customer is cheated. By adding extra water, the natural liquidity of milk changes and its density also changes. If the density is measured, it can be easily detected whether water has been mixed in the milk or not. Lactometer works on the basis of Archimedes principle. Due to this, the change in the natural density of milk is detected and adulterated milk is identified.

Testing for melamine-A liquid chromatography triple quadrupole tandem mass spectrometry (LC-MS/MS) method for melamine residues consists of initial extraction with 2.5% aqueous formic acid, followed by a series of filtration, centrifugation and dilution steps.

To check whether the milk is adulterated with starch or not, add two teaspoons of salt or iodine to 5 ml of milk. If the color of the milk turns blue, it means that the milk is adulterated with starch.

To check the presence of formalin in milk, take 10 ml of milk in a test tube and add 2-3 drops of sulfuric acid to it. If a blue ring appears at the top, the milk is adulterated otherwise not.

The World Health Organization had issued an advisory to the Indian government against adulteration of milk and said that if adulteration of milk and milk products is not checked, then about 87 percent of the country's population can fall prey to dangerous and life-threatening diseases like cancer by 2025. Adulterated milk is white poison. Decrease in the quality of milk indicates contaminated milk. If drinking water is contaminated, it will quench thirst but will not satisfy the soul. It will cause many diseases in the body. Similarly, when milk is contaminated, it becomes white poison. Therefore, the nutritional quality of milk and milk products should not be tampered with. Therefore, it will not be surprising to say that community health is the wealth of the nation. Regarding adulterated milk, we can say that the nutritional value of milk is being exploited.