

Camel Milk: White Gold from Desert

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INTRODUCTION

The world's nomadic peoples have continued to eat camels as a source of sustenance since they were originally tamed for their milk. Products made from camel milk are common in pharmacies and are more popular due to rising demand. Camel milk has a composition that is more similar to that of human milk and has both great nutritional value and healing properties. Camel as a livestock animal contributes significantly to the ecosystem of the desert, and its milk may help with human nutrition in the world's hot and arid places. All of the necessary nutrients found in other milk are present in this milk. In various parts of the world, camel milk has been used for human sustenance as well as the treatment of a number of illnesses, including dropsy, jaundice, TB, asthma, and leishmaniasis or kala-azar. Camel milk differs from other milks, though, in that it contains more minerals (sodium, potassium, iron, copper, zinc, and magnesium) and less sugar and cholesterol. The milk is thought to possess therapeutic qualities as well.

Availability of Camel milk

Pasteurised camel milk can be stored in the refrigerator for up to 15 days. This camel milk is pasteurised for 15 seconds at 74°C before entering the markets of Gulf countries. The shelf life of pasteurised camel milk is only 5 days.



Fig: Different form of camel milk

Sara International sells two camel-related items in the Indian market: milk (manufactured by Natural Product Company) and milk powder (made from camel milk). A number of components in camel milk have been demonstrated to be more heat-resistant than those in cow milk. Many vitamins and hormones in raw milk were reduced by only 5 to 8% when cooked from room temperature to 72°C for 5 minutes.

Components of Camel Milk

Major components of camel Milk

- Fat:** Camel milk consists of 2% fat which is mainly polyunsaturated fatty acids, omegas. These fats are completely homogenized so appear as minute globules in the milk, giving it the white color.
- Lactose** (milk sugar) is readily digested by human lactase with no signs of “lactose intolerance”.
- Minerals** Camel milk has a mineral concentration between 0.60% and 0.90%. Zinc, iron, copper, and manganese are all present in higher concentrations in camel

milk than in bovine milk. Like cow milk, camel milk has high concentrations of other essential minerals: calcium, magnesium, phosphorus, sodium, and potassium. Camel milk is rich in chloride because camels eat A triplex and Acacia, which are generally high in salt.

- Proteins:** Camel milk does not contain the allergens which are present in ruminant milk. Insulin is one of the camel milk proteins and as camel milk does not form cheese the milk quickly passes the stomach into the intestines. Camel milk contains a number of “protective proteins” which keep the body healthy.
- Vitamins and electrolytes:** The most important vitamin is vitamin C and calcium and iron are the most important electrolytes. Camel milk has a good nutritional composition, being close to mothers’ milk and importantly, has the many protective proteins, especially the immunoglobulin’s. Infants who get the camel milk have far less illnesses than their counterparts.

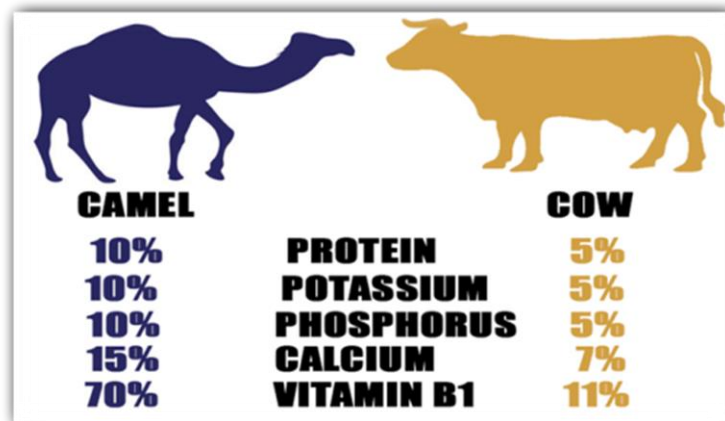


Fig: Major components of camel and cow milk

Therapeutic uses of camel milk

- Diabetes:** Camel milk contains a protein which is similar to insulin, which has been shown to be beneficial. Diabetes is caused by a malfunction of the receptors for insulin on the cell surface. As camel milk contains tissue repairing proteins, the

problem is cured. Insulin is one of the camel milk proteins and as camel milk does not form cheese the milk quickly passes the stomach into the intestines. Therefore, insulin is not destroyed and coagulated and is absorbed rapidly into the blood where it reduces blood sugar.

2. **Hepatitis and other liver problems:** Hepatitis is a world-wide affliction, often requiring inoculations against it. Scientific publications have shown that camel milk cures both hepatitis B and hepatitis C. The special fat in camel milk also soothes the liver. It has beneficial action on chronic liver patients. There is a possibility that the relatively high concentrations of ascorbic acid in camel milk helps in improving liver function.
3. **Autism:** Autism is an autoimmune disease which does not affect the brain but rather the intestines. Autism spectrum disorder (ASD) is a severe neurodevelopment disorder characterized by impairments in social orientation, communication, and repetitive behaviors. Camel milk provides many benefits, especially for autistic children. Camel milk is traditionally used in autism treatment in some areas of the world.
4. **Intolerant To Lactose:** Camel milk has lower lactose in comparison with cow's milk. It was seen that camel's milk can be considered an option for an individual's intolerance to lactose, who presents symptoms when ingesting cow's milk.
5. **Diarrhea:** Camel milk is a remedy for viruses causing diarrhea (such as Rota virus). It can be concluded that fermented camel milk can be considered as a good food for high nutritive and therapeutic application.
6. **Milk Allergy:** The incidence of milk allergy in infants and young children is very high. Thus, finding suitable milk for alternative mothers or bovine milks in children was needed. Camel milk can safely be used as an alternative. Many children, and adults, suffer from food allergies. As camel milk does not contain allergens and the immune system is rehabilitated, children recover from their allergies.
7. **Tumors:** There are a number of tumour's which can be cured with camel milk, the

action is due to the fact that the very active antibodies bind onto the tumors, killing the tumor cells without damaging healthy tissue. Human antibodies are too big to do this [13]. Lactoferrin also is effective in some cancers.

8. **Colon Cancer:** Camel milk components inhibit the growth of colon cancer cells. Lactoferrin, a glycoprotein has a high affinity for iron and may aid cell proliferation by transporting iron into cells. Lactoferrin has also been shown to have a variety of biological activities, including providing antibacterial activity in infants. It interacts with polysaccharides ligands on cell surfaces and may activate cell signalling pathways such as the Fas pathway, resulting in the inhibition of tumor growth via apoptosis.

Anti-aging potential of camel milk

Camel milk against heavy metal toxicity

Camel milk's antioxidant vitamins, magnesium, and zinc may lessen cadmium's effects on red blood cells by reducing free radicals and oxidative stress. Total erythrocytes, haemoglobin, and haematocrit increased following 30 days of camel milk consumption, mitigating aluminum's adverse effects. In lead acetate-poisoned rats, camel milk restored hepatic enzyme function.

Major Benefits of Camel Milk

1. In response to the worldwide demand for camel milk, the creation of new camel farms in the different parts of the World is becoming a separate industry. There are already huge farms, but camel growing and milk production is not easy.
2. Camels, like cows, have 4 udders and can theoretically be milking twice a day. Automatic milking machines have already been created for the camels. But it should be kept in mind that camels are much more cowardly than cows, if the camel feels not good, it stops giving milk.

3. One camel gives an average of 7 liters of milk per day. This also explains why camel's milk and other products are considerably more expensive.
4. Camel milk is believed to be better tolerated by people with allergies. Camel milk has a high nutritional value. It contains 5 times more vitamin C than cow, almost no sugars, and is 50 percent less fat. Vitamin B, as well as calcium and the mineral content of it is higher than in cow's milk.
5. Two milk proteins that can provoke allergies: beta-lacto globulin and beta-casein are not present in camel's milk. Perhaps, for people with lactose intolerance, it will be better absorbed.
6. At the same time, camel milk contains allergens (like any milk) that, like caseins, can trigger reactions in people who are allergic to cows' milk. Studies have shown, however, that these allergic reactions are less common than goat's milk as a substitute for people who suffer from milk allergies.
7. Cosmetics also assess camel milk. Companies process "white gold from the desert" and include it in body care products.
8. Camel milk is appreciated by the cosmetics industry because it contains more lactic acid, which belongs to the group of alpha hydroxy acids. This lactic acid delicate wrinkles to smooth out and remove darker spots from the skin. In addition to milk, the proteins contain collagen and elastin, which stretch the skin and strengthen its elasticity.
9. Vitamins B and C act antioxidant, protect against free radicals and help the skin itself produce the necessary collagen.

Challenges and opportunities

Considering escalating issues like climate change and shortage of food, the sustainable food sector that produces nutritious camel milk with multiple health benefits may turn out to be a meal of the future. While camel milk output has increased, only a small fraction of the milk produced is consumed. Recent research has looked at the challenges the technology presents to turn it into various items with monetary worth. To improve upon the current technologies, based on the processing of bovine milk solely, extensive research into the basic chemical makeup of the components of camel milk is required. More study into processing and preservation methods for camel milk is warranted to increase its global availability and acceptance. Further research into the chemistry of camel milk proteins and the modifications those proteins undergo as a result of various processing methods is, without a doubt, warranted. These alterations greatly aid the development of new camel milk products.

CONCLUSION

Nature has bestowed upon us many blessings for our benefit. Given its widespread production and wealth of nutritional benefits, milk is regarded as the most useful natural liquid. There are many advantages of drinking camel milk for humans. Compared to cow milk, it has fewer short-chain fatty acids. It resembles human milk because it is deficient in -lactoglobulin and is high in immune globulins. In addition to being able to produce milk during drought conditions, camels have milk that is perfectly suitable for human consumption. There are countless benefits to health that it offers. Without a doubt, camel milk is the desert's "white gold."