

## Medical Benefits of Camel Milk: Review

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**Abstract:** Camel is avital support to daily life is the areas described as natural homeland; as a food force and away of transportation. Camel milk has been known as nutrition's meal and as medicine for different diseases long time ago such as dropsy, iron, deficiency anemia because it has high concentration of iron, anti-diarrhea, anti-bacterial anti-cancer, anti-tumor and ulcer and prevent of arthritis. Camel milk is used for autism treatment, for allergies treatment. Camel milk is the most milk like human milk than in other milk. Camel milk enriched with insulin or insulin like protein camel milk cures and treated food allergies, hepatitis and skin disease.

**Key words:** Camel milk • Medical benefits • Anti-bacteria • Autism treatment anti-cancer • Anti-tumor-allergies treatment

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### INDRODUCTION

Camel is called the ship of the desert; Camel milk is called white gold. Camel milk is the most type like mother milk. The camel milk is better than the ruminant animal's milks because it is lower in sugar and cholesterol also the camel milk contains higher vitamin C and higher minerals such as (potassium, sodium, zinc, iron, magnesium and copper). It contents protective proteins such as lactoferrin, immunoglobulin, lacto- peroxidase and lysozyme [1].

Camel is a vital support to daily life in the areas described as its natural homeland, as a food source and a way of transportation. Camel milk has been known as nutritious meal and as medicines for different diseases long time ago [2], such as leishmaniosis, asthma or kala-azar, jaundice, dropsy, or hypertensive [1, 3]. During the lactation period of camels which is from 12 to 18 months the production of milk decreases and becomes from 12 to 18 months [4].

Recent studies showed that Camel milk is considered as antifungal antibacterial, antiviral and antioxidative. It also possessed anti-hepatitis, anticancer agents for hypoglycemic, paratuberculosis activity. It also preventives of aging, remedy for cosmetic the immune against diseases and detergents [5, 6].

Konuspayeva *et al.* [7] showed that Camel milk has low amount of  $\beta$ -casein and it lacks  $\beta$ lactoglobulin which cause allergic reaction in lactose intolerant individuals. It has insulin-like and protective protein type which is useful in diabetes, diarrhea and autism. It also possesses anti-tumors characteristics [8]. Furthermore, Milk obtained from camel has a powerful immune system [2] therapeutic action for anti-thrombotic properties, beside its effect as peptic ulcers anti-malignant [9].

Jilo [10] concluded that, Camel milk differs from other ruminant milk as it contains low cholesterol, low sugar, high minerals, high vitamin C and higher protective proteins like lactoferrin, lactoperoxidase, Immunoglobulins and lysozyme. Camel milk lacks  $\beta$ -lactoglobulin and used as an option for the individuals intolerant to lactose of cow's milk Camel's milk is unique in terms of antioxidative factors, antibacterial, antiviral, antifungal, anti-hepatitis, anti-arthritis, treatment for paratuberculosis, preventive of aging.

Alhaj *et al.* [11] showed that, The Handbook of Research on Health and Environmental Benefits of Camel Products is an essential reference source that discusses the nutritional, physical and chemical factors of camel milk in comparison to other animal milks and introduces benefits attributed to camel meat.

The aim of this review was studying the medicinal effects of camel milk.

**Nutritional Values of Camel Milk:** Potential beneficial of camel milk is due to bioactive components [12, 13]. Also, there are medicinal benefits of Camel milk for treatment of stomach discomfort, asthmatics, gastritis, tuberculosis, urinary problems hepatitis fever and HIV, [3]. It is also claimed that Camel milk is useful in treatment of Jaundice, Malaria, Constipation, post-partum care of women due to that camel animals. Conesa *et al.* [14] reported that camel milk contains IgG or IgA which possesses antibacterial, antifungal and anti-parasitic action.

Omar and Eltinay [15] found that camel milk has peptides, digestion absorption [1] found that Camel milk is more like human milk and differs from ruminant milk.

Jilo and Tegegne [16] concluded that camel milk is used for treatment of series of diseases such as dropsy, jaundice, anti-hypertensive, asthma and leishmaniasis or kala-azar. Camel milk is one of the most important milk among other mammal's milk due to its nutraceutical attributes. It has high concentration of iron which makes it panacea for those who have iron deficiency anemia.

The salt present in camel milk has significant effect on human health. It is used for various diseases in urban areas of developing countries. It is a potential functional food. In urban areas of developing economies, it is used for ascites. Camel milk contains high concentration of immunoglobulins and insulin. People with enervated immune system and those who are lactase-deficient can consume camel milk without any allergic response. Moreover, it is also used for potential therapeutic properties such as its efficacy against diabetes and cancer as well as having anti-hypertensive properties [17].

**Anti-Diabetic Properties of Camel Milk:** Abdel Gader and Alhaider [2] showed that diabetes is caused in excess of blood glucose levels, as a result of low insulin secretion or high insulin resistance. Gul *et al.* [8] reported that camel milk contains tissue repairing proteins, so the problem is solved. Gizachew *et al.* [4] showed that camel milk has 150 U/ml insulin. Abdel Gader and Alhaider [2] reported that camel milk is protected from digestion as it is encapsulated to be easy to pass to the blood stream.

**Anti-Bacterial and Antiviral Properties of Camel Milk:** Camel milk exhibits antimicrobial action as presence of lactoferrin, protective protein, Lacto peroxidase. It contains higher of lactoferrin and lysozyme

than stronger immune system and smaller immunoglobulin than cow and buffalo milk [7]. Benkerroum [18] reported an antimicrobial effect of camel milk against *L. monocytogenes* and *E. coli*. and compared antimicrobial effect of raw camel milk and heated milk which showed that the raw milk is more effective.

Al-Majali *et al.* [19] studied the effect of protective proteins (extracted from camel milk) against Gram positive or gram-negative bacteria and rotavirus. Result showed that camel-milk-LP was bacteriostatic against both Gram-positive and Gram-negative cultures strains. The antibacterial activity of camel milk of hydrolyzed caseins was increased when compared with that of native casein. This suggests that antibacterial fragments derived from camel caseins were released [20].

Mal *et al.* [21] classified camel milk as antibacterial material against *E. coli* and *S. aureus* on rats. Yassin [22] concluded that camel milk has synergistic effect with antibiotics which may be used to minimize the dose of antibiotics and reduce bacterial antibiotic resistance.

**Treatment of Crohn's Disease:** Camel milk has great bactericidal properties and can re-habilitate the immune system. It was observed that drinking or consumed non-pasteurized camel milk is beneficial to people who has symptoms associated with an infection of the alimentary canal. In 2008 Shabo *et al.* [23] reported that camel milk has shown good effect for treating Crohn's diseases.

**Camel Milk for Autism Treatment:** Autism disease is auto-immune-disease affecting an intestinal enzyme responsible for the amino acids formation from the milk-protein-casein. Sometimes casein breaks down to powerful opioid, casomorphine instead of primarily beta-casein and beta-lacto-globulin. This opioid leads to typical cognitive and behavior symptoms due to brain damage [5].

Grover *et al.* [24] concluded that children who have autism and consumption camel milk have reduction in autism symptoms and improved skills, language and skin.

Zibae *et al.* [25] Camel milk as a supplemental treatment seems less invasive and costly than specialist care, medications, alternative treatments and behavioral interventions. Based on our findings, camel milk is safer for children, effective in the treatment of autism, improves general well-being, promotes body natural defenses, is a good nutritional source and can helps the daily nutritional needs of humans.

**Camel milk for Allergies Treatment:** Different studies showed that camel milk lacks  $\beta$ -lactoglobulin this protein and thus the sensitive individual is not affected by problem of allergies [4]. El-Agamy *et al.* [13] and El-Agamy [26] reported that camel milk is recognized as a good substitute for human milk as it does not contain  $\beta$ -lacto-globulin.

Ehlayel *et al.* [27] reported that camel milk contains low amount of lactose with small molecules so, it can be easily digesting. Yosef *et al.* [28] showed that Individual patients whom have lactose intolerance can consume camel milk without adverse symptoms.

Kaskous [29] reported that, camel milk has very high concentration of mono-and polyunsaturated fatty acids, serum albumin, lactoferrin, immunoglobulin's, vitamins C and E, lysozyme, manganese and iron, as well as the hormone insulin. Therefore, camel milk can be prescribed as remedy in many human illnesses. It has been proven as a useful application in stomach and intestinal disorders, Diabetes-1, food allergy. In addition, camel milk has been used to reduce cholesterol levels in the blood, to avoid psoriasis disease.

**Camel Milk as Anti-Diarrheal:** Yagil [30] found that Camel milk contains a lot of protective proteins: lacto peroxidase, lactoferrin, PGRP and NA Gase that exert bactericidal immunologic and veridical properties. Protective proteins in camel milk; lysozyme, lactoferrin. have antidiarrheal/antibacterial action which produce antibodies against rotavirus. Greenberg and Estes [31] showed that camel milk is rich in anti-rotavirus antibodies, which is preventing diarrhea in infants.

**Camel Milk as anti- Cancer, anti-Tumor and Ulcer:** Camel milk has high content of vitamins that are very useful and have great potential effect in reducing the oxidative stress caused by toxic agents. Additionally, camel milk content of magnesium is an essential factor for biosynthesis of glutathione and prevents the damage which occurs in cellular components by the action of the free radicals, peroxides or heavy metals. Also, significantly encourages the antioxidant action in the cells [32].

**Therapeutic Effects of Camel Milk:** Yagil [30] and Mihic *et al.* [33] reported that camel milk prevents the mechanisms of disease. Ehlayel *et al.* [27] stated is utilization for people who suffer from allergy to cow milk proteins. Konuspayeva *et al.* [34, 35] found that camel milk is used as a source of antioxidant, anti-inflammatory, insulin-like. Galali and Al-Dmoor [36]

reported that camel milk is rich in zinc and magnesium, so it used as antiulcer.

**Camel Milk as Antiaging:** Salami [37] reported that consuming camel milk, produced and hydrolyzed peptides, so it is a suitable agent for anti-ageing as its high contents of vitamin C or the role of ascorbic acid protect collagen.

**Skin and Cosmetic Values of Camel Milk:** There is a fact, that each of vitamin A, B, C and iron is very important agent for human skin. Generally, milk contains lanolin and other moistening materials which have soft and smooth properties providing a calming effect on the skin. For beautiful skin, it may be preventing skin disorders such as Psoriasis, Dermatitis, Acne and Eczema [36].

**Camel Milk Effect on Hepatitis:** Saltanat [38] recorded that camel milk provides a potential cures and treatment properties for both hepatitis B and C. The special type of variant fat in camel milk the liver and soothes has healthy action on chronic liver patients. There is also a fact that the relatively high level of ascorbic acid in camel milk helps in improving and enhancing the function of liver [8]. However, other recent studies have revealed that camel lactoferrin markedly inhibits hepatitis C virus genotype 4 infection [39].

**Camel Milk Prevents Arthritis:** Camel milk has higher content of lactoferrin compared to other milk types. This protein has additionally important effect, by removing the free iron ions from joints of arthritic individual patients [40].

## CONCLUSIONS

Camel is an important animal in desert life as it is considered a good source of meat, milk and transportation. Its milk uses as medicinal agent for diverse ailments. It knows as the most milk similar to human milk than any other milk. Camel milk is distinguishing and nutritious liquid which containing different and various proteins which have protective effect like lactoferrin, lysozyme, lacto peroxidase, immunoglobulin which exert antiparasitic, antibacterial, antiviral and antifungal properties. They also possessed hypoglycaemic, anti-oxidatives, aging prevention, growth promotion, autoimmune diseases and antitumor activities.

Camel milk is enriched with insulin or insulin-like protein Camel milk cures and treated food allergies, hepatitis and skin diseases.

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