

CAMEL MILK, THE WHITE GOLD OF THE DESERT

Ulrich Wernery

Central Veterinary Research Laboratory, P.O. Box 597, Dubai, UAE

ABSTRACT

New World Camelids are not milked, but the milk of Old World Camelids is being used for many centuries. The two-humped camel lives in cold climate, hence their milk fat can reach levels of 8% which serves as an energy source for the newborn. The one-humped camel lives in hot climate zones, hence the fat content is low, but the water content is high. The camel udder possesses 4 quarters, one teat per quarter and 2 teat canals per teat, sometimes even 3. One of the most remarkable features of dehydrated camels is the ability to continue lactation, and to secrete milk that is highly diluted with over 90 % water content. A temperamental camel cow which does not like or know its milker, will simply cease production, but a contented camel, on the other hand, can produce milk for a very long period. Globally, the milk productivity of camels is more than five times lower than milk productivity of cattle. The camel's mammary gland possesses at least 8 (4 x 2) independent milk units. The camels are milked by hand. A pilot camel milking project using bucket milking machines began at CVRL in 2001. A modern camel dairy farm with the intention of milking several hundred dromedaries will be opened in autumn 2006 in Dubai under the name "Dubai Camel Dairy Farm" (DCDF). Mastitis in camels is rare. Treatment of camel mastitis is carried out parenteral due to the narrow teat canals. No bacteriological standards exist for raw and pasteurised camel milk. Transformation from *colostrum* to normal milk is reached after 7 to 10 days. The *colostrum* of camels is white like normal milk. Duration of milk let-down is very short: about 1 to 2 mins, therefore milking from both sides is essential. Camels should be milked several times a day. Good milkers can produce 20 to 30 litres daily. Camel milk is a rich source of proteins with potential anti-microbial and protective activity. Components of camel milk differ considerably of those from ruminants and have strong similarities to those of human milk. Camel fat contains much higher concentration of long-chained fatty acids (C 14 – C 18) than short-chained fatty acids, and is therefore healthier. Camel milk contains less vitamin A, B₂ folic acid and panthothenic acid than cow milk. On the contrary the content of niacin and vitamin C is remarkably higher than in cow milk. The high concentration of vitamin C and the high water content are the most eminent factors of camel milk. Whey proteins in camel milk were more heat resistant than those of cow milk. The degree of denaturation varied in camel milk from 32 % to 35 % at 80°C. In cow milk, 70 to 75 % of whey proteins were denaturated at this temperature. Pasteurisation at 72°C for 5 min revealed only 5-8% losses of camel milk compositions investigated. Lactation periods of up to 24 months are known to occur in dromedaries. Camel milk proteins are different to cow milk, this may be the reason why no allergies to camel milk proteins are known. Camel milk does not coagulate easily. It passes the acid stomach undisturbed, and reaches the intestines for absorption. Camel milk contains five times more vitamin C compared to cow milk. Camel milk contains insulin and is therefore used to treat *Diabetes mellitus* camel milk contains medicinal properties to treat different ailments such as auto-immune diseases, allergies, asthma, rash, diabetes, infectious diseases like tuberculosis, stress, peptic ulcers and cancer. It is a booster of the immune system. Camel milk products are consumed commercially as fresh raw or pasteurised camel milk, cheese, especially soft cheese in West Africa, e.g. "Caravane" made in Mauritania, ice creams with different flavours and milk shakes, puddings, such as crême brulée, panna cotta and the Arabian dish "Mohabila" and "Susa" (North-Eastern Africa) or "Shubat" (Kazakhstan) as sour milks.

Key words: Camel, constituents, milk, physiology, products

Physiology of the milking camel

New World Camelids are not milked, but the milk of Old World Camelids is being used for many centuries. The milk of bactrians possesses a higher amount of milk compositions than the milk of dromedaries which is more diluted. Nature follows logical rules. The two-humped camel lives in cold climate, hence their milk fat can reach levels of 8 % which serves as an energy source for the newborn. The

one-humped camel lives in hot climate zones, hence the fat content is low, but the water content is high.

In drought-stricken areas of the world where continuous severe drought decimates cattle, sheep and goat populations, only the camel survives and continues to produce milk. One of the most remarkable features of dehydrated camels is the ability to continue lactation, and to secrete milk that is highly diluted with over 90 % water content. In true

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