



BACTRIAN CAMEL MILK FROM THE GOBI LAND

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Introduction. Mongols without Gobi land difficult to imagine. The most wonderful representative of Gobi ecosystems is camel/ *Camelus bactrianus*/. The Gobi population obtains the majority of the biological and nutritious substance from camel milk. For the nomadic Mongols the camel milk has been not only the source of food and drinks in the severe Gobi-desert conditions, but also has been the basic means of preventing from illness or of healing diseases.



Fig.1. Camels in winter seasons

9.6% of the entire camel herds in the world are Bactrian camels. Over 30% of this kind dwells in the Gobi area which holds 42% of the entire Mongolian territory.

The population census and the employment status of 2005 showed that those living in the Gobi area who are engaged in animal husbandry are fully dependent on the camel yields. If we look back at the history of food consumption beginning from the time of Chingghis Khan until today camel milk and milk products constitute more than 50% of the herders in the Gobi region.

The number of these animals which have been so much helpful in the lives of generations after generations in Mongolia, has been drastically decreasing over the recent years. There are several factors that had led to this. From among them we can note that the good tradition of milking every she-camel and processing of the camel yields has been disrupted over the recent 30 years; there was unfavorable weather conditions; the breeding, caring, pedigree and selection work was not sufficient. Having no unusual taste and smell, camel meat is most suitable for making sausage. It can be another factor for the decrease in the camel herd since the time when the country moved into market economy.

Out of the factors that would prevent the decline in the number of camels we should note that there is a greater need to pay attention to the utilization of camel wool and milk.



Fig.2. The camel population of Mongolia, ts.head

This is related to the issue of creating the advanced technology suited to the local areas for processing camel milk basing on the biological and nutritious qualities, arranging the highly demanded new products that are significant for health care and making an adequate use of camel milk in other social areas.

Results and discussions. The lactation period of camel is 17 months. Depending on the natural, environmental and feeding conditions a camel can produce 0, 5 kg of milk a day on the average and it's possible to use 500-550 kg of milk a year. If we milk about 80% of the entire she-camel herd of Mongolia and obtain 0.5 liter from a camel it is possible to use a million liters of milk a year.

The Mongols have a specific technology of processing camel milk that had come down generation to generation. As we know Gobi herders make over 50 types of dairy products through the traditional method. Technology of making these products has been refined all the way down today and is the most suitable and perfect method in the animal husbandry conditions.

Fermented milk products have an important place among traditional dairy products in Mongolia. One kind of fermented camel milk called "tsegee" is consumed daily by Mongols. These products are called shubat and chal in the Middle Asia and Kazakhstan. Ninety-five percent of camel milk is used in the production of tsegee. Mongols developed their own bacteria for the fermentation of camel milk. Raw camel milk is not subjected to any heat treatment. The raw milk is poured directly into a goat or camel skin sack called a "khokhuur" and is allowed to ferment for 24-48 hours. Also wooden vessel is used in "tsegee" making as well a wooden paddle is used in order to churn and aerate the fermented milk.



Fig. 3. Hide sack and wooden fermenter for camel milk



During the churning of camel milk, lactic acid and alcoholic fermentation occur simultaneously and causes the specific taste and smell of tsegee. Tsegee contains enormous amounts of amino acids such as glutamine, asparagine acid, proline, leucine, lysine, methionine, etc. Generally, tsegee is rich in vitamins C, A, D, as well as, all kinds of vitamins B are available.

Table 1. Composition and some properties of fermented milk – tsegee	
	M±m
Dry matter,%	15,36 ±0.1
Protein ,%	2,92 ± 0.05
Fat ,%	4,9 ±0.18
Lactose,%	3,3 ±0.098
Ash,%	0,82 ±0.03
Density, g/sm ³	1,012
Alcohol,%	<4
Acidity,T ⁰	120-216
Dominant microflora	Str. thermophilus, Lbm. bulgaricus and Saccharomyces or Torulopsis
pH	3,9



Fig.4. Beauty creams advertisement

Fermented milk was made from camel milk with *L. acidophilus*. It has been confirmed during the clinical observation that this particular product is quite suitable for children’s care and health care treatment. Also were experimented the technology of the following new products: sterilised and pasteurized milk, dried curd. Research attention has recently focused on the technology of milk products for functional foods such as a probiotics.

We are facing today the issue of making a technological solution of transferring these traditional methods into the production method. In according to this were conducted researches since 1986 for the study of chemical and physical properties of camel milk.

The amount of albumin and globulin in the camel milk is 1,5-2 times more than the cow milk. This result of the research is an expression of the biological significance of the camel milk. We have observed one specific feature of the camel milk during the research. The camel milk preserves its freshness longer than that of other kind of milk. In other words, the acidity of camel milk develops comparatively slowly than the cow milk. We relate this feature of camel milk to its mineral contents or high contents of Na and K.

Also we found the following specific features of camel milk. For coagulation of camel milk protein it took twice as much time for the coagulation agents (enzyme, acid etc) to act. The moisture of the protein products prepared by the coagulation was more than the cow milk. From this, it was concluded that the hydrophilic activity of casein in camel milk is considerably higher than in cow milk. Another specific feature of camel milk is that its fat has a light color and high melting temperature.

The results of the experiments of the use of camel milk fat for the beauty purposes showed that the face cream could increase the nourishing quality and can be significant for enriching it with biologically active substances (A, D, E vitamins, fatty acid etc). As a result of the experiments, beauty products were developed and introduced into local market.



Fig.5. New products / pasteurized milk, dried curd and fermented milk/

Conclusion. Great attention needs to be given to production system involving the camel in order to indicate their vulnerable points. Camel food production is the traditional and more logical objective of the camel rising. The new and improved technology can aid more effective stimulus to raising camel population as a source of food in Gobi lands. Moreover, these will promote sustained economic and social developments and improve the living standard of the Mongolian pastoralists. Research findings showed that the establishment of a national research centre for camel development in Mongolia – which has 30 % of the world’s bactrian camels- stands out as a unique case of recognition of camel pastoralism as a production system with a future.

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