

Traditional Fermented Milk Products in Mongolia

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The fermented products take major position among Mongolian dairy products. Generally, fermented products include yoghurt, mares coumiss, clabber of camel and cattle and intermediate products derived from above, which all are made by souring milk and these products are daily food consumption of herdsmen. As well they become intermediate products of cinder materials of processing several other food products.

In writing of ancient Greek historian Herodotus it was mentioned that nationals of the countries surrounding the Mediterranean sea were using fermented food products.

Milk of various kinds of livestock is soured by specially prepared agent to make fermented dairy products and majority of the fermented products are intended for diet of elderly people and children because of their therapeutic nutritional effect on digestive organs function.

From time immemorial Mongolians have been consuming fermented food products and had obtained bacterial sources of fermentation agent used for making them. Central Asian nomadic herdsmen domesticated some kinds of wild animals and also they could "domesticate" microorganisms capable of causing fermentation from plant, grass, fruits.

There are many lactic acid bacteria and yeasts on the surface of plants. Nowadays there are still being custom of using some plants such as *Rheum undulatum*, *Artemisia*, *Artemisia vulgare* for making coumiss, yoghurt, if the fermentation agent used for making such as products is lost.

Fermentation agent for yoghurt, coumiss was found many centuries ago and keeping it in pure state from generation to generation is not so easy in condition of nomadic lifestyle of Mongolians. It is thought that there are more than 80 kinds of fermented dairy products in the earth and their fermentation agents are different. It is peculiar that although a lot of fermented milk products for instance mares milk clabber of camel and cattle, yoghurt of sheep, goat, cattle and yak have different tastes, they are soured by the same agent. In condition of nomadic livestock husbandry various fermentation agents are unavailable to be preserved in pure state.

Central Asian nomads decided intelligently the problem of fermentation agent for dairy products, because cocci, bacilli and yeasts as fermentation agents are able to grow together and the desired product is made by activating some microorganisms while others are inactivated in compliance with certain technological regimen for processing of fermented dairy product. For example to activate lactic acid bacteria for making yoghurt the milk is warmed at 45°C and put in airless place.

When temperature reaches 30°C after gradual reduction below 40°C, lactic acid cocci grow and produce aromatic substances. Because yeasts are not capable to grow at high temperature and in airless condition, they are inactive during yogurt processing. Yeasts are activated at 20° to 25°C in air to make yoghurt or curd.

In case of activation of too much fermentation agent yoghurt is added for fermentation of yoghurt while fresh milk is added to coumiss and curd for normal souring.

Mongolian yoghurt

One of the most distributed and consumable traditional food products for Mongolian households is

yoghurt. Yoghurt is made of milk of mongolian cattle, yak, sheep, and goat. Mostly, boiled milk / removed the skin/ is employed for yoghurt making.

Traditional methods of yoghurt processing particularly, milk warming, amount of fermentation agent, coagulation time, preparation of fermenting agent, its storage are similar in their principle. To make yoghurt in home condition the milk is warmed at 37-45°C followed by adding 1-3% of fermentation agent and pour back for 5-10 minutes for proper mixture then the pot with product is closed with the lid and put in warm place to reach the acidity at 60-65°T. In cooler condition the pot is entirely covered with blanket.

Fermentation agent is obtained from yoghurt aged for 1 to 2 days or yoghurt filtrated and dried.

D.Tsoodol, P.Monkhtuya /1974/ found that thermophilic bacteria participate in microflora composition of mongolian yoghurt and lactic acid bacilli have the activity of inhibiting the growth of putrefactive bacteria and antibacterial effect.

Scholars determined the composition and properties of microorganisms of mongolian yoghurt and found that thermophilic lactic acid bacilli of Bulgarian bacilli type and local strains of thermophilic lactic acid streptococci play major role in the composition of the fermenting agent and isolated the local strains. Research conducted for the last years evidences that among lactic acid bacilli included in the composition of microflora of mongolian yoghurt the local strains which produce antibiotics against causative agents of dysentery, salmonellosis, colibacteriosis and putrefactive bacteria are not few.

Fermented mares milk / coumiss/

Mares milk has lower general acidity/in average 8.30T/ high content of sugar and comparatively lower amount of fat and protein. The tradition of making coumiss from mares milk was inherited to today's generation of Mongolians. Except of Mongolia, in Kazakh, Kyrgyz, Bashkir and Khalimag the mares coumiss is available.

R.Sukhbaatar /1971, 1973/ investigated the useful microflora of mares coumiss and techniques of preparation and preservation of fermentation agent and noted that lactic acid streptococci and bacilli are in the agent. To prepare coumiss fermentation agent lactic acid bacteria are selected on the basis of the temperature for growth and activity of causing acidity while yeasts are based on the abilities of breaking down lactose, alcohol production, antibacterial activity etc.

The survival rate of dried mixture of above mentioned 3 microorganisms was similar with that of cultures of each microorganism alone. It was found that the dried agent for fermentation of coumiss is feasible to be stored up to 6 months without loss of fermenting capacity.

For traditional making of coumiss the milk is processed inside of special container / skin bag, wooden barrel, pail etc/ by using fermentation agent. The agent and milk is mixed in ratio of 1:2 to 1:3. Fermentation temperature is 20°C to 25°C and the milk is churned 200-3000 times in intervals of 1.5 to 2 hours for activation of alcoholic fermentation.

Cattle milk drink / undaa/

Fermented cows milk is processed in the skin bag and wooden pail. The fermentation procedures in Khangai and Govi regions respectively are different.

Camel clabber

Camel milk is rich in fat, protein and they amounts 65% of total dry matter.

R.Indra, U Osorkhan, D.Tsoodol /1976/ determined that, some changes emerge between dry matter,

sugar and fat in camel milk and granulated and ungranulated bacilli, lactic acid cocci and yeast in the milk participate in fermentation process as a result of study on camel clabber composition, physico-chemical properties, microflora of the milk and bacterial agent of fermentation. Camel milk is soured by lactic acid bacteria and yeasts to make clabber. As result of fermentation the amount of dry matter and sugar in the milk reduce and lactic acids, alcohol and carbon dioxide gas is produced in similar way like mares coumiss and cattle milk drink. As well the amount of vitamins B₁ and B₂ increase twice.

Principally the fermentation procedure of camel clabber making is the same as maras coumiss and cattle milk drink.