

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Review of Technology of Kazakh National Milk Product – Kurt.

**Aigul Omaralieva^{1*}, Gulbanu Karmanova¹, Tolkyn Kozhakhmetova¹, Zhanar Safuani¹,
Almira Bekturganova¹, Dina Kurmangalieva², Ardak Bekturganova³.**

¹Kazakh University of Technology and Business, Astana, Respublika Ave 54/2, Kazakhstan

²S. Seifullin Kazakh AgroTechnical University, Zhenis Ave 62, Astana, Kazakhstan.

³National centre of expertise of Akmola region, Kudaiberdiev Str. 27, Kokshetau, Kazakhstan.

ABSTRACT

In this paper the technologies of production of national Kazakh milk product – kurt are presented. Kurt is hard pressed and dried long storage cheese, given from the salted caseated milk. The new methods of kurt production with increased nutritive and biological value are described. The used ingredients and formulations of kurt is shortly summarized.

Keywords: kurt, technology, formulation, national, milk

**Corresponding author*

Milk and milk products are essential food for human nutrition, especially for baby, children and older persons. The major value of the milk is that all food components in milk are well balanced, easy digested and almost completely used by human body. On chemical composition of milk there is nothing quite similar food [1, 2]. Milk is rich in vitamin A and D, and also has ascorbic acid, riboflavin, thiamine and nicotinic acid.

There are lots of products made from milk, including cream, sour cream, curd, kumis, cheese, yogurt, whey, kefir and others.

Kurt is wholesome food with more than one thousand years of history. Usually the technology of kurt production as follows: to the milk with temperature of 32-34 °C is poured 3-5% of ferment, prepared from the pure culture lactobacillus. Milk ripening goes on for 6-8 h. Then, the curd is heated to 60 °C and hold for 30-40 min. In this case, the albumen and globulin are deposited and bonding with casein enriches the product. Also kurt contain the lactose. Precipitated whey is removed and the curd is filled to the cotton sheeting bags. After 2-3 h of self-pressing the curd is salted and formed in the shape of ball or cake weighing 40-60 g. Formed briquets are sun dried. Chemical composition of ready product as follows: fat – 12%, salt – 2%, moisture – 15%; acidity – 300-350 °T [3].

Kurt is hard pressed and dried long storage cheese, given from the salted caseated milk. It is made from cow, goat, sheep, horse and camel milk.

Kurt has a unique composition: milk protein, bioactive substances, carbohydrates, enzymes, microelements, vitamins. Kurt from goat milk contains large amount of protein, fat, calcium, vitamin A, thiamine, iron, magnesium and potassium [4].

Kurt has the property of restoring the beneficial microflora of intestine and easy and quickly digested in human body. Vitamin A as a component of kurt is necessary for improvement of vision, cell growth and renewal and increase the immunity. Kurt also contains vitamin E, vitamin D, ascorbic acid. On mineral composition kurt is a rich source of calcium, which strengthens bones, involving in collagen formation and improves metabolism [5, 6].

The purpose of this study is to review the technology of kurt production developing in Kazakhstan and Russia.

Assenova et.al. [7] developed the technology of dry cottage cheese product – kurt. According to the invention the cottage cheese is used as the main ingredient and also sodium chloride, dry whey, vegetable dried paprika and spicy dried mint are used as components at the following proportions (table 1):

Table 1: Formulation of kurt, %

#	Ingredient	mas. %
1	low-fat cottage cheese	94-95
2	sodium chloride	1-3
3	dry whey	2-3
4	vegetable dried paprika	0,5
5	spicy dried mint	0,5

Use of ready cottage cheese allows to overcome seasonal nature of production of kurt by using reserved (frozen) summer cottage cheese during the milk volume reduction. The kurt is enriched with vitamins and other biological active substances by addition of dry cottage cheese whey. Practically all vitamins of milk are passed into the whey. Whey proteins (β -lactoglobulin, α -lactalbumin, a blood serum albumin, immunoglobulins, etc.) is the most valuable proteins of an animal origin and are source of essential amino acids. One of the most valuable components of whey are vitamins (among which there are vitamins such as vitamin A, C, PP, B2, B12, E, etc.)

The technology of kurt is implemented by the next way. The cottage cheese is produced by the method described in the standard #94-95 of Kazakhstan. Low-fat cottage cheese is pounded on a cutter during

12-15min for receiving the homogeneous consistence product without lumps and grains. The vegetable dried paprika and spicy dried mint are grinded on the grinder and sifted.

The sodium chloride, grinded paprika and mint are added to scrubbed low-fat cottage cheese, after that the dry whey is added. The mixture is carefully mixed within 5-10 minutes. After that kurt is formed as flat round cakes. The formed kurt is dried up at the temperature of 45-50 °C within 5-6 hours.

Another method of production of kurt which is produced from cow, sheep or goat milk by souring with pure growths of lactic streptococci with the subsequent separation of whey from a clot and drying is developed by Tverdokleb et.al. [8]. The normalized milk with a mass fraction of fat 0,6% is pasteurized at 80-85 °C with endurance of 10-20 min and cooled up to 32-34 °C, bring ferment in quantity of 5% and fermented to receiving the dense clot with acidity 75-76 °T. Then the clot is warmed up to 38-42 °C and maintained within 20-30 min for acceleration of whey selection. Then the whey is removed and the clot is pressed within 3-5 hours in the sacks with mass of 7-9 kg and the moisture content of 76-80%. The clot is formed in whetstones, flat cakes, etc. For salty kurt production , before the formation the protein mas is salted. Then kurt is dried in express drying chambers at 35-40 °C, and formed ещ 20-60 g.

In the work [9] it is described the method of kurt production. The technical object is simplification of process of kurt production due to use of earlier produced cottage cheese, improvement of nutrition and biological value of kurt by addition of dry whey.

The technical result is achieved by the fact that in the method of kurt production including receiving of basic component - cottage cheese, addition of other components, pressing, formation, drying and smoke drying. As the basic components is used cottage cheese, for other components are used sodium chloride and dry whey (curd whey). Then all components are mixed for 10-15 minutes, when pressing press pressure is led up gradually to 1:3 to the mass of a product, smoke drying is carried out at the temperature of 30-40 °C within 6-10 hours. Kurt is shaped to short cylinder with a diameter of 1,5 cm and 2-2,5 cm long. The formulation of the kurt is shown in the table 2.

Table 2: Formulation of kurt, %

#	Ingredient	mass.%
1	cottage cheese	78,5 - 88,0
2	sodium chloride	1,5 - 2,0
3	dry whey	10 - 20

Addition of dry cottage curd whey enriches kurt with vitamins and others biological the active materials.

Shagiev K.T. et.al. [10] developed the composition for production of kurt. The technical result consists of enhancement of nutrition value and preventive properties of the fermented milk product “kurt” with retention of its traditional taste and color. The technical result is achieved by adding to the formulation of kurt the black seed oil and rice flour at the following proportion of components, mas. %: black seed oil - 0,5-0,8; rice flour - 3 - 5; ferment prepared from pure growths of lactic bacteria - 3-5; salt - 1-4; milk - the rest. The method is carried out with use of the known technology of the fermented milk product “kurt”.

The purpose of the invention of the work [11] is development of the of kurt production method, which is available for private small plants, with use of all types of milk, and vegetable additives allowing to raise the yield of ready product. The method is carried out by following way.

The normalized, pasteurized milk of cow, sheep, camel, goat and/or their mix is fermented at 25-30 °C in order to receive the dense clot, then clot is separated from whey, and received clot is salted with sodium chloride at the rate of 2-4% to the mass of the product. After that the pumpkin pulp puree is added in a quantity of 10% to the mass of the product, then mixed, and formed to round, ellipse, cylindrical or other forms. The given kurt is dried until 17% of moisture content. Pumpkin is prepared by the next way. Pumpkin is washed, sorted, cleared from the skin, seeds. Then it is cooked to readiness, cooled, crushed to a condition of puree with the homogeneous pasty consistence.

The chemical composition of developed kurt is (g/100g of the product): water - 90,3, protein -1,0; fat- 0,1; carbohydrates-5,9, monosaccharides - 4, fiber - 1,2, starch-0,2, pectin-0,3, organic acids - 0,1; power value-23 of kcal.

The composition of ready "Kurt" product is presented in the table 3.

Table 3: Formulation of kurt, %

#	Ingredient	mass.%
1	clot (from cow's, camel milk and/or their mixture)	60,0-70,0
2	sodium chloride	1,2 - 2,4
3	pumpkin puree pulp	18,0-24,5

Another method [12] of production of kurt with use of the vegetable additives allows to expand the range of long storage food products with therapeutic appointment. According to the method, the clot is received by fermentation at the temperature of 28-32 °C, then clot is salted with iodinated salt at the rate of 2-4%. Remain whey is exposed by ultrafiltration until a pasty weight is obtained. Then the received mass and couched wheat grains are added to the clot at the ratio of 2:1 and mixed. After that it is formed in the form of round, ellipse, cylindrical or other form and dried to 17% of moisture content in ready product.

Gorbatovskaya et. al. designed the technology of kurt enriched with bioavailable and necessary mineral substances, food fibers and other nutrients, for functional nutrition.

The method is carried out as follows: the superfine-grinded grain of oats (the nanostructured flour) in a quantity of 10% and a salt - 2% are added to suzbe (cheese curd). The ready mixture is formed on 40-50 g and dried in the aired room at the temperature of 25-30 °C within 6 days or in express drying chambers at the temperature of 35-40 °C during 18-20 hours. The offered way of production of kurt with superfine-grinded oats (nanostructured flour) have the high content of mineral substances, food fibers, complete proteins, vitamins and allows expanding the range and increasing nutrition value of final product [13].

Described technology of kurt production is aimed to increase the nutritive value of food product by the enrichment with minerals, food fibers, proteins and vitamins.

REFERENCES

- [1] Dubenetskaya M.M., Kalendo L.V. Meals from the milk products. Minsk, BelEn, 1996. 352p.
- [2] Mirasheva G., Kakimova Z., Baybalinova G., Toleubekova S., Kakimov A., Bepeyeva A., Amanzholov S. RJPBCS, 2016, 7(3):761-765.
- [3] Kugenev P.V. Milk and milk products. Moscow, Rosselhozizdat, 1985. 80p.
- [4] Gavrilova N.B., Abrosimova S.V., Makarushin A.A. Milk processing, 2007, 10:18-19.
- [5] Myrzakhanov N.M., Sadikova A.K. Vestnik KarGU, 2010, 11:56-60.
- [6] Hramtsov A.G., Vasilisin S.V. Industrial processing of secondary dairy raw materials. - M: DeLi print, 2003. - 100 p.
- [7] Patent # 28652 of Republic of Kazakhstan, 15.07.2014, Bul. #7.
- [8] Tverdokhlebov G.V., Dilanyan Z. H., Chekulayeva L.V., Schiller G. G. The technology of milk and milk products – Moscow, Agropromizdat, 1991. 463p.
- [9] Patent #27564 of Republic of Kazakhstan, 15.10.2013, Bul. #10.
- [10] Patent #2464794 of Russia, 27.10.2012 Bul. # 30.
- [11] Patent #27211 of Republic of Kazakhstan, 15.08.2013, Bul. #8.
- [12] Patent #25213 of Republic of Kazakhstan, 15.12.2011, Bul. #12.
- [13] Patent #30887 of Republic of Kazakhstan, 15.02.2016, Bul. #2.