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International Competition of
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BLACK SEA SCIENCE 2020

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1. FOOD SCIENCE AND TECHNOLOGIES

RESEARCH ON THE GOAT MILK YOGURT WITH FRUITS OBTAINING AND QUALITY INDEX CHARACTERISTICS OF IT

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Abstract. *In recent years increasing trend to guide consumers to the yogurt with high biological value. Interest presents both raw materials with a special chemical composition such as goat's milk, as well as the emphasis on non-lactic ingredients / additives, in the case of the fruit-flavored fruits, raspberries, strawberries, peaches, apples marked by the vitamin content, fibers and mineral substances, which increase the nutritional and biological value of raw materials.*

The current study was conducted to produce by thermostat method a goat's milk yoghurt with the use of fruits and evaluated for 15 days with a physicochemical, organoleptic, microbiological, antioxidant capacity, polyphenol content, anthocyanins, vitamin C and β-carotene. The added fruit type also had a strong impact on the titratable acidity and pH values respectively. During storage the pH was slightly reduced, the peach yogurt had a pH of 4.68. Higher acidity were obtained for raspberry yogurt, 103°T. The amount of dry substance indicates 20.8% in yogurt with aronia. After the yogurt samples organoleptic properties examination it was found that yogurt with strawberries and raspberries preserved their characteristics best. The results obtained for the determination of yogurt total number of germs are satisfactory, the values being between 2.2 x 10^7 and 3.1 x 10^7. Aronia yogurt has the highest total content of polyphenols (187.1 mg GAE / 100g), raspberry yogurt has the highest anthocyanin content (48.34 mg / 100g), antioxidant activity is the highest, 0.007 %, in raspberry and strawberries yogurts, the maximum content of β-carotene (0.50 mg / 100 g) in raspberry yogurt and the ascorbic acid content (25.77 mg/100g) in strawberry yogurt. Based on the analysis of all the results, it was determined that yoghurt with strawberries, raspberries and aronia was appreciated among the potential consumers with the highest ratings with a practical period of storage of 10-12 days.

Keywords: *goat milk, fruit, nutritional value, quality characteristics.*

I. Introduction

Enlargement of the fermented dairy products assortment at the end of the 20th century and the beginning of the 21th century, has contributed to the intensification of different technological processes for improving the rheological characteristics, extending the term of preservation of the products. Milk is a very important and accessible source of animal protein, which is necessary and indispensable for the vital activity of the human body, [1].

Goat milk and dairy products present excellent nutritional qualities and high biological value with high degree of assimilation and play an important role in the nutrition of the population, especially of developing countries. In developed countries, where there is a tendency to consume healthy food, there is a particular interest in goat's milk. Goat milk production is well developed in Europe (France, Spain, Holland, Norway). In most countries, goat's milk is processed at farms or small businesses. In

Russia there are only a few dairy farms. Goat milk and goat milk products are launched in comparatively small volume on the Russian markets, but the popularity of this product is increasing.

In the last years in the Republic of Moldova we can see the tendency to increase the herd of goats and increase the volume of milk obtained, in order to use it on the industrial scale.

Several authors consider that after its composition goat milk is superior to the cow milk due to the nutritional, toning, anti-anemic and anti-infectious effects. Due to the fat globules fineness goat milk is easily absorbed by the intestinal villi and thus has a higher digestibility. Under the action of gastric juice the proteins coagulate into fine flakes, are easily digested by the proteolytic enzymes of the small intestine and are therefore easily assimilated.

Yogurt is considered to be the healthy dairy product. Its beneficial effects in the healing of various intestinal diseases made it quickly known and its process could not remain secret. But although today 30% of the world's population consumes yogurt regularly and it is a great food due to its taste, [2, 3].

Fruits are some of the healthiest foods for the human body. They have a high water content and a very low fat and calorie content so they can be consumed in larger quantities. Fruit gives flavor and variety to dairy products. Consumers are increasingly interested in the consumption of nutrient-rich yoghurt, as it is known that not all plant sources have the same chemical composition or the same biological properties. The use of the bioactive potential of biologically active compounds in fruits with health benefits is continuously expanding, the main purpose being the rational use of these compounds in yogurt, [4, 5].

Purpose of the thesis: Obtaining goat milk yogurt with high biological value and analyzing the quality indices of the manufactured product.

The objectives of the thesis:

• Bibliographic analysis of the quality of goat's milk compared to other milk varieties;

• Analysis of the quality indicators of the raw materials, auxiliaries and methods of analyzing the quality of the finished product;

• Elaboration of the technological scheme for the production of yogurt with fruits from goat's milk;

• Analysis of the quality indices of goat milk yogurt samples with bleached fruits.

II. Literature review

Analysis of the dynamics regarding the production and processing of goat milk in the Republic of Moldova

According to the National Bureau of Statistics in recent years, there is an increase in the quantity of goat milk produced and processed in the Republic of Moldova.

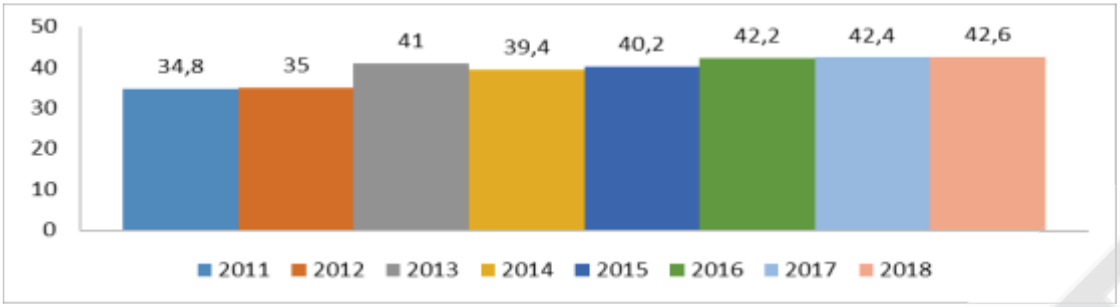

Figure 1. Graph of goat's milk production and processing, thousands of tonnes

Composition of goat milk

The goat's milk composition is comparable to that of cow's milk. Both types of milk have about 13% dry matter. Proteins, lipids and lactose are found in equivalent quantities and therefore provide similar amounts of energy

Table 1. Characteristics of goat milk and cow's milk, [1, 6]

Content,%	**Milk**	
	caw	**goat**
Water	87,3	86,3
Energetic value, kcal	71	65
Fat	3,8	4,4
Protein	3,3	4,1
Casein	2,7	3,3
Lactoze	4,7	4,4
Mineral solts	0,7	0,8
Acidity, °T	16-18	15-19
Density, °A	1,03	1,83
Dry metter	12,7	13,7

Goat's milk is fatter. Studies show greater variability. This difference has a small impact on the consumer, because the milk distributed and sold on the market is standardized, like cow's milk, goat's milk is sold at 2.5% and 3.5%.

Table 2. Similarities and differences in the chemical composition of goat milk and cow's milk, [2]

Goat's milk vis-à-vis cow's milk	
Similarities	Differences
1. There is no major difference in energy value	1. Proteins are differently distributed: the casein micelle of goat milk has more β-lactoglobulin than α-lactalbumin.
2. They have about the same amount of lactose	2. Fat globules are smaller and evenly distributed in goat milk.
3. Both goat and cow's milk have a high protein content.	3. Vitamin A in goat milk is in the form of retinol, which is the most assimilable form in the human organism.
4. Both types of milk have a low iron content.	4. Goat's milk has a higher vitamin D content.
5. Goat's and cow's milk have about the same amount of vitamin B_1,B_2, B_6, and PP.	5. In goat milk the fatty acids are in short and medium chains.
	6. Goat's milk contains more vitamins and mineral salts than goat's milk
	7. Goat milk contains twice as much calcium, phosphorus, potassium, sodium.
	8. Laptele de capră are un conținut mai mic de acid folic, vitamina B_{12}, E și C decît laptele de vacă.

The advantages of consuming goat's milk are:

• *Digestibility of proteins and lipids* - Protein digestibility in goat milk is facilitated by its less binder feature. The proteins contained in goat's milk are less agglomerated than in cow's milk. The curd formed during digestion is therefore smaller and more friable, [7]. Acids in gastric juice have a greater contact surface with proteins. This accelerates the action of the enzymes and ensures an accelerated gastric transit. The United Nations has studied the processing of all types of milk (including cow's and goat's milk) in yogurt and concluded: «Recent and accurate work, few in number, tend to show important differences in protein digestion according to technology to which the milk is subjected. So if we consume milk, a casein forms curd quickly in the stomach, which is slowly digested as peptides. But if we consume yogurt, the shell does not form and, very quickly, the casein is evacuated in degraded form and even in non-degraded form ", [8].

The fat globules in goat milk are smaller than the fat globules in cow milk, [9,10]. The action of lipases increases with increasing contact area between lipases and fat globules. In addition, goat milk fat globules contain several short and medium triglycerides chain. These short and medium triglycerides chain have the particularity of being water soluble. Solubility in water allows the immediate action of lipase and fatty acid absorption without the use of bile acid micelles. Therefore, they can be used immediately as a source of energy. In the case of consumption, goat milk fat may increase triglyceride levels in the blood, [3, 7, 9, 10, 11].

• *Protein intolerance* - According to a document issued by health professionals at the Canadian Dairy Bureau, "only about a quarter of adverse reactions to food can be confirmed by diagnostic tests, suggesting that the incidence of" true "food allergies is overestimated, [12]. Therefore, there may be non-immunological reactions to cow's milk proteins, [3] Goat's milk contains more deproteinized nitrogen, the proteins are of higher quality, higher in thiamine content and practically do not cause allergic reactions and digestive disorders It is known that α_{s1} - casein - the main protein of cow's milk - is a powerful allergen for humans, in the casein of goat's milk casein contains more the β-casein fraction, [13]. Goat's milk are more easily assimilated and rich in amino acids such as: histidine, lysine, aspargic acid, tyrosine, tryptophan; contains several serum proteins, namely, immune globulin, has high lactalbumin and lactglobulin content. Due to the pronounced dietary-curative properties it is a valuable product in the nutrition of children, the sick, and elderly, [2].

• *Lactose intolerance* - Despite the absence of scientific studies, there is evidence that some people who are lactose intolerant in cow's milk do not respond to lactose when they eat goat's milk. However, the amounts of lactose in the two types of milk are not quite comparable. Lactose intolerance occurs for two reasons:

1. The intestine does not produce lactase

On the one hand, irritation of the intestinal mucosa can literally destroy lactase secreting cells. This situation is usually resolved after the disappearance of irritable factors and the reconstruction of the intestinal mucosa, [13, 14]. On the other hand, suppression of the secretory potency of lactase by changes in genetic precursors may be involved [14]. This explanation is poorly documented and requires further research.

In any case, intestinal irritation or changes in genetic precursors do not suggest any difference in lactose tolerance of cow's or goat's milk, [2].

2. Lactase is present, but it cannot exert its action

According to the literature, a difficulty may be involved in neutralizing the pH of the product when entering the duodenum. This explanation supports the importance of mineral administration in the human body. Certain conditions associated with aging or certain pathological conditions can interfere with the assimilation of minerals by the human body. Malnutrition, in both adults and children, is caused by lactose intolerance, [14].

Biologically active product - Goat milk contains vitamins, minerals, trace elements, electrolytes, enzymes, proteins and fatty acids that are easily assimilated by the body, [15]. Goat's milk has therapeutic benefits for people with certain dietary problems, so doctors have recommended goat's milk for infants and other people allergic to cow's milk. Similarly, it has been used in the treatment of ulcers, [8,15]. The variation of milk compositions and total milk production depends on different factors. Some of these factors are physiological, genetic and climatic factors. Some physiological factors are lactation stage, age, health of the udder and type of diet. Daily variations and seasonal changes can be considered climatic factors, [16]. Lactation periods, as well as climatic conditions are generally called seasonal changes that have a great influence on milk constituents.

Use of fruit filling in the manufacture of dairy products

Fruits are sources of glucose and fructose, vitamins, minerals, phenolic compounds, dietary fiber. Considering their compatibility with milk, apple, apricot, raspberry, strawberry, cherry are considered most acceptable. To give the yogurt a fruity taste and aroma as well as an attractive appearance, the fruits are used in the form of syrups, concentrates or dried mixtures. Thanks to these fillings, the content of vitamins, carbohydrates, minerals in fermented dairy products is regulated. A special role in the formation of functional properties belongs to dietary fiber, [17, 18, 19].

Fruits: Aronia, Apples, Peaches, Raspberries, Strawberries

To blanche fruits involves placing the produce in boiling water. The main purpose of protecting fruits and vegetables is to inactivate all the enzymes present and especially the oxidative enzymes, which are the most heat resistant. Among the beneficial effects, besides those related to the inactivation of enzymes, it is mentioned the destruction of the vegetative forms of the microorganisms and the elimination of air from the tissues, which consequently fixes, maintains and even accentuates the color of the finished products, as well as fixing and preserving the vitamin C during the following processes. In general, the microorganisms that survive to the blanche process are highly heat resistant. Regarding the adverse effects of blanching process is the loss of soluble substances (sugars, mineral salts, vitamins, etc.) in the boiled water. These losses vary depending on the blanching conditions and especially on the duration, temperature and the ratio between the amount of water and the amount of material subjected to be blanched. Any increase in time and temperature results in a considerable increase in the loss of soluble extract, including vitamin C, while causing excessive tissue softening, [20].

III. Materials and methods of research

Materials

Goat milk was carried out at a local farm, which was labeled and transported at 4 ° C to the laboratory, to analyze the following physico-chemical parameters: fat, protein, total dry substance, pH, density using for comparison Moldovan standard: 2015 Goat and sheep raw milk. Specifications. This standard establishes technical conditions for the raw goat milk quality collected for industrial processing.

Starter culture for the dairy products manufacture: Lyofast YAB 352. Dosage: 10 UC / 1000 liters. The composition: Streptococcus thermophilus, Lactobacillus delbrueckii subsp. Bulgaricus, Lactococcus lactis subsp Lactis biovar diacetylactis, sucrose and maltodextrin.

Fruit has been added to the yoghurt as a pulp in order to maintain the viable form of the bioactive components. Fruit was added at a concentration of 10%.

Methods

- Determination of titratable acidity (ISO/TS 11869 and IDF/RM 150).
- Determination of pH. It was carried out using a Hanna Instruments pH meter which was previously calibrated with buffer solutions having pH 4.0 and pH 7.0 respectively. (ISO/TS 11869 and IDF/RM 150).
- Determination of fat content by acid-butyrometric method (GOST 5867).
- Determination of milk protein content. The principle of the method consists in blocking the amyl groups of proteins with formaldehyde and liberating the carboxylic groups, which are neutralized with 0.1N NaOH solution.
- Determination of the viscosity of the fermented milk products on the BROOKFIELD DV-III Ultra rotary viscometer.
- Determination of the total dry substance content (MAC Humidity Analyzer, Radwag).
- Determination of water activity aw,% (Novasina, LabSwift-aw)
- Assessment of sensory quality based on the score scale. Method principle: Evaluation of each organoleptic characteristic by comparison with scoring ranges of 0 ... 5 points and obtaining the average score of the group of tasters, (ISO 6658: 2005).
- Determination of yeasts and molds according to (SM EN ISO 4833-1:2014)
- Determination of vitamin C according to GOST 30627.2-98.
- Determination of β-carotene according to GOST 8756.22-80.
- Determination of total polyphenols by Folin-Ciocâlteu method. Expressed in gallic acid equivalents, mg GAE / 100 g FW (Sconta, 2012) to the spectrophotometer SF-46, $\lambda = 750$ nm.
- Determination of anthocyanin content. It was determined by the spectrophotometric method at $\lambda = 540$ nm, modified at the Food Technology Department, TUM, extracted with a 95% C_2H_5OH solution and 1.5N HCl (85:15 to sample discoloration)
- Determination of antioxidant capacity by potentiometric method. (SM EN 12857:2014).

IV. Results and discussions

Milk quality - raw material used in the yoghurt manufacture

Goat's milk was subjected to a lot of physico-chemical and organoleptic analyzes before being processed, because the yogurt quality depends on the quality of the raw milk. The results obtained in the TUM laboratory were studied in comparison with the indicators presented in the Moldovan standard: 2015 Goat and sheep raw milk. Specifications.

The results of the sensory analysis of goat milk and cow's milk are listed in table 3.

Table 3. Organoleptic indices of goat milk - raw material.

Parametres	Goat's milk
Appearance and consistency	Homogeneous liquid, with a matte, specific appearance. No sediment, watery, filamentous appearance
Color	White
Taste and smell	Pleasant, sweet, characteristic of milk

Table 4. Physical-chemical indices of raw goat's milk.

Parametres	Goat's milk
Temperature, °C	20,4
Fat content, %	3,1
Density, g/cm^3	1,030
Acidity, °T	18
Dry metter	12,15
Protein	3,34
pH	6,8

It has been proposed to make 6 varieties of yoghurt. The assortment of yoghurt is shown in table 5:

Table 5. Assortment of manufactured yogurt

Raw material	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Goat milk	Classic yogurt	Yogurt with aronia	Yogurt with apple	Yogurt with peach	Yogurt with raspberries	Yogurt with strawberry

Yogurt has been manufactured using the thermostat method because it is an effective method to study the formed coagulum and its firmness. [21, 22]

The raw material mixture was pasteurized at 85-90° C for 2-3 min, after which it was cooled to the sowing temperature and subsequently inoculated with Lyofast YAB 352. The samples were thermo stated at 38-40°C for 6 hours. The end of coagulation time was determined by the pH value, and visually by the firmness of the coagulum. The yogurt samples were packed in 180 g containers and stored at 4±2 °C.

Table 2 shows the yoghurt quality indices. Values obtained for titrable acidity range within insignificant limits for yogurt samples depending on the content of acidic biologically active substances. From the data of table 2 it can be seen that according to the physico-chemical, microbiological and organoleptic qualities, the obtained yogurt corresponds to the technical conditions stipulated in the Government Decision nr. 158 - Milk and dairy products. Yogurt have a fine and soft consistency, due to the fact that the fat globules of goat's milk are smaller and evenly distributed.

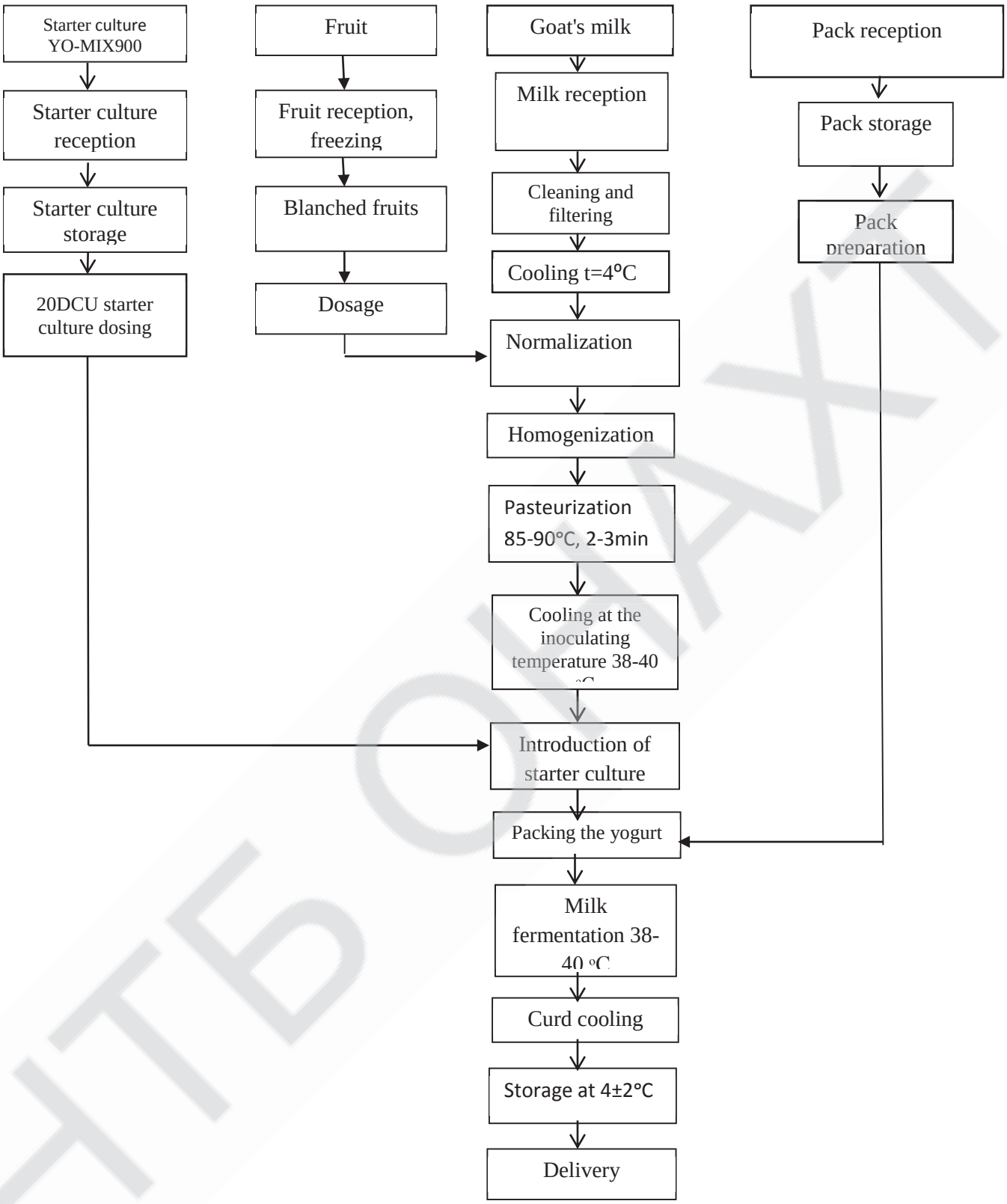

Figura 2. Scheme of goat's milk yogurt production with blanched fruits by the thermostat method.

The type of added fruit had an impact on the titrable acidity and pH values respectively. Higher titers of acidity (103°T) were obtained for raspberry yoghurt, the high acidity being converted by fruit acidity. The smallest values were obtained for peach yoghurt, 90 ^{0}T.

The dry matter quantity indicates different values ranging from 17,83% for apple yoghurt to the maximum of 28,03% obtained for the control sample. The dry matter

content is inversely proportional to the water activity value, for which minimum values of 0.895% for the control sample and 0.904% for yogurt with apple, peach, raspberry were obtained. This two parametres were influensed by the fruit add.

The fat and protein content were slightly influenced by the addition of fruits. That parameters are lower in fruit yoghurt compared to control samples due to the low fruits fat content and due to increasing of water content because of fruit blanched process in the yoghurt manufacturing.

Rheological properties are important indicators of the yogurt quality during processing. The samples were investigated at a temperature of 20˚C. This behavior is typical for non-newtonian fluids and is clearly highlighted for fruit yogurt samples. Minimum viscosity values were obtained for the control yogurt $5,09*10^2$ mPa·s, followed by yogurt with aronia, apple, peach, raspberry, strawberry.

Table 6. Yogurt quality's indices

Nr.	Characteristics		The experimental value				
		Sample 1	**Sample 2**	**Sample 3**	**Sample 4**	**Sample 5**	**Sample 6**
		Classic yogurt	Yogurt with aronia	Yogurt with apple	Yogurt with peach	Yogurt with raspberries	Yogurt with strawberry
1.	**Titrable acidity, °T**	98	94	95	90	103	98
2.	**pH**	5,06	4,65	4,62	4,68	4,61	4,67
3.	**Dry metter, %**	28,03	20,80	17,83	18,73	19,11	20,40
4.	**a_w, %**	0,895	0,901	0,904	0,904	0,904	0,903
5.	**Protein content, %**	6,03	5,31	5,14	5,43	5,62	6,01
6.	**Fat content, %**	3,4	2,0	2,6	2,4	2,3	2,0
7.	**Viscosity, mPa·s**	$5,09*10^2$	$5,45*10^2$	$7,65*10^2$	$8,50*10^2$	$8,64*10^2$	$8,96*10^2$
			Microbiological characteristics				
8.	**The total number of microorganisms, cfu/ml**	$2,1*10^7$	$1,5*10^7$	$1,7*10^7$	$1,8*10^7$	$1,7*10^7$	$1,6*10^7$
9.	**Yeast and mold**	absence	absence	absence	absence	absence	absence
			Sensory characteristics				
10	**Appearance and consistency**	Soft curd moderately viscous					
11	**Taste and smell**	Acid lactate	Sweet taste and characteristic aroma of the introduced fruit				
12	**Color**	White with cream shade	Corresponding to the color of the introduced fruit, uniform throughout the yoghurt				

The sensory characteristics show that strawberry and raspberry yogurt samples best preserved their organoleptic characteristics, having a fine shell, uniform color throughout the mass, sweet taste and characteristic aroma of the added fruits.

Yogurt in combination with fruits play a functional role in the human body, due to the supply of fiber, vitamins, minerals, phytonutrients, polyphenols, anthocyanins, [23, 24]. Yogurt with aronia had the highest polyphenol content (187.10 mg EAG/100 g). Peach and apple yogurt recorded the following values for total polyphenol content: 184.15 mg EAG/100 g., respectively 173.93 mg EAG/100g. The lowest values of total polyphenol content were recorded by control yogurt sample 52.3 mg EAG / 100 g.

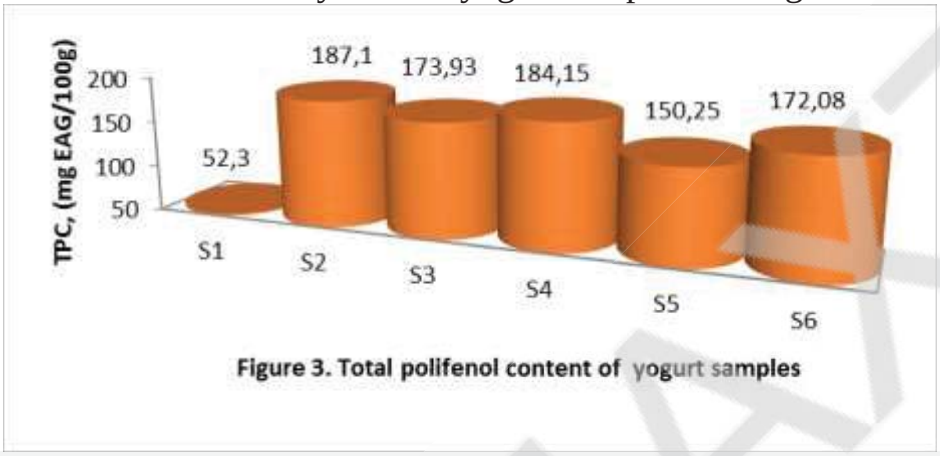

Figure 3. Total polifenol content of yogurt samples

Anthocyanins play an important role in the quality of the color of the yogurt made with fruits and differ from other compounds due to their ability to form different structures depending on the pH of the environment. Due to this property, anthocyanins can provide the body, first and foremost, with protection against the intense harmful reactions of free radicals and can be used in the manufacture of yogurt as natural colorants, [25].

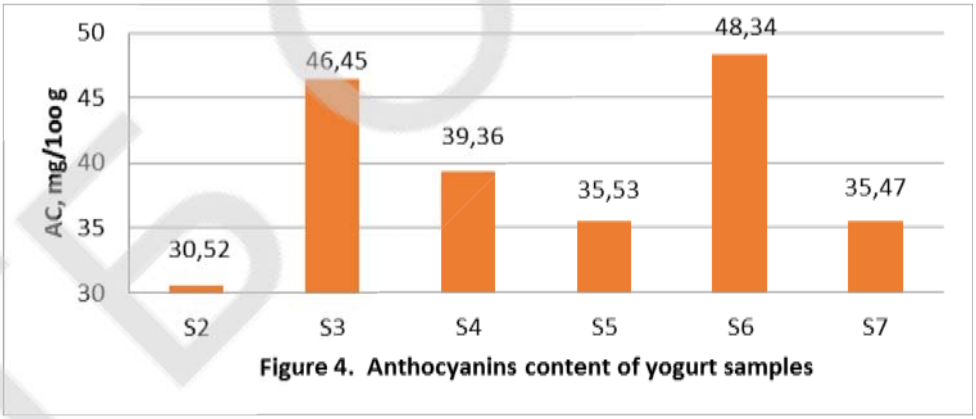

Figure 4. Anthocyanins content of yogurt samples

Using a simple method for quantifying total monomeric anthocyanins, the anthocyanin content of the five yogurt samples with fruits was determined. Values ranged from 35.53 - 48.34 / 100g (Figure 4). The highest anthocyanin content was determined in raspberry yogurt (48.34 mg/100g), followed by aronia yogurt (46.45 mg/100g), apple yogurt (39.36 mg/100g), yogurt with peach (35.53 mg/100g). The lowest value was determined for strawberry yogurt (35.47 mg/100g).

Antioxidants are bioactive substances that prevent oxidation or inhibition of reactions promoted by oxygen or peroxides and thus protect cells from the effect caused by oxidative stress. Fruits are a natural source of antioxidants and therefore their effectiveness in protecting against oxidative stress has been demonstrated by some researchers, [26].

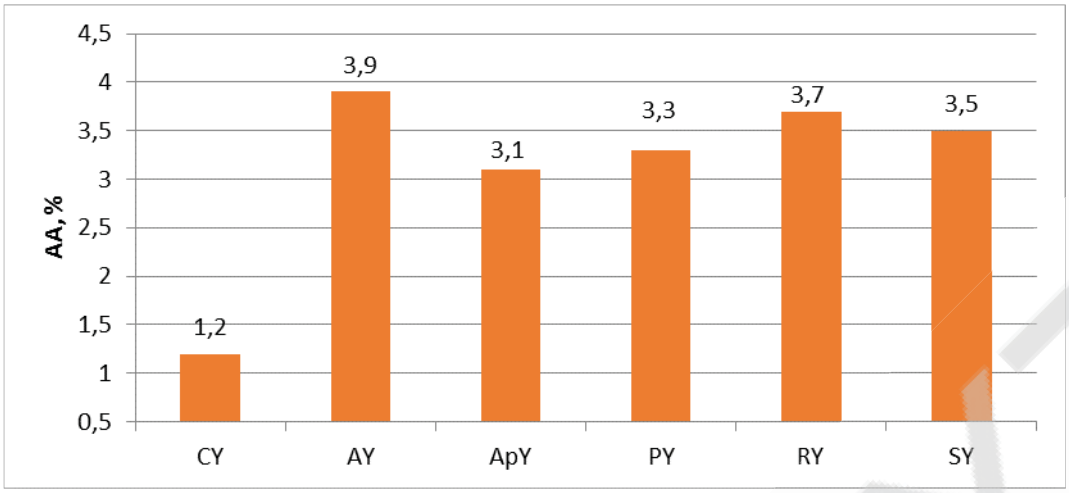

Figure 5. Antioxidant activity of yogurt samples

Natural antioxidants with effect on oxidative stability have the role of preventing rancidity, an undesirable fact in the obtained yogurt samples. Yogurt with aronia registered the highest antioxidant activity of 3.9%, followed by raspberries and strawberries, with values of 3.7% and 3.5%, respectively.

The vitamin content in yogurt can be significantly reduced due to their destruction during the technological process of milk pasteurization. β-carotene and vitamin C are important components in describing the nutritional value of yogurt, [27, 28, 29].

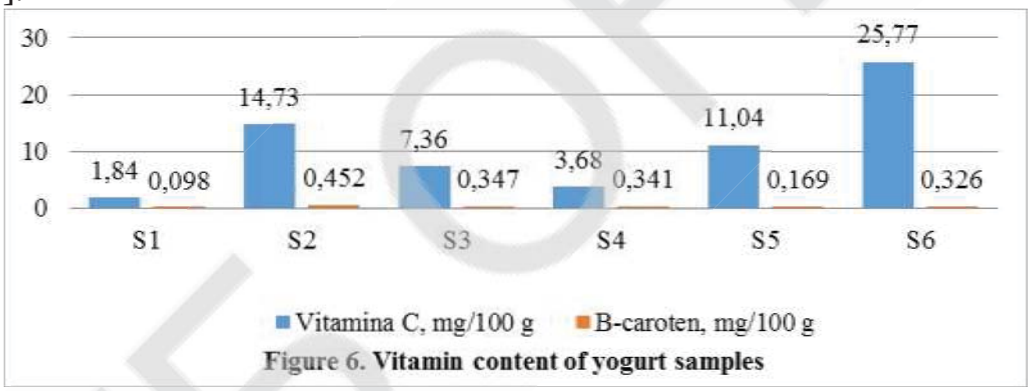

Figure 6. Vitamin content of yogurt samples

The ascorbic acid content of the yogurt fruit samples varies from 1.84 to 25.77 mg/100g. The strawberry yogurt had the highest value (25.77 mg/100 g). The content of β-carotene varied between (0.098-0.452 mg/100 g), yogurt with aronia had a major value, 0.452 mg/100 g.

Evolution of the quality indexes of goat's milk yogurt with blanched fruits during the storage period.

Sensory indices of goat milk yogurt were rated according to the score scale, presented in the sensory analysis sheet: 5 = very good, 4 = good, 3 = satisfactory, 2 = unsatisfactory, 1 = bad, 0 = very bad.

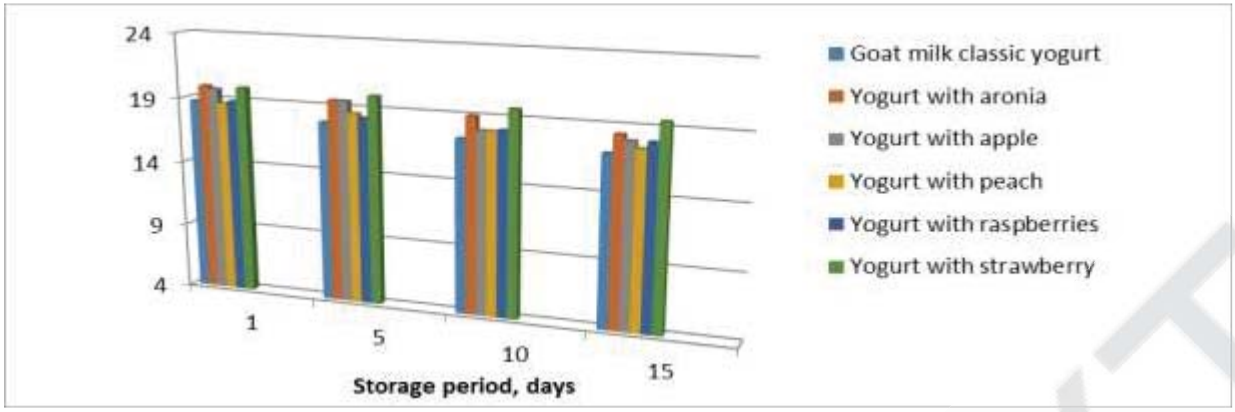

Figura 7. Total average score for goat milk yogurt.

After the sensory examination of the yogurt samples it was found that the goat's milk yogurt with strawberry and raspberries best preserved their organoleptic characteristics such as: appearance, color, consistency, smell and taste.

Physico-chemical indices

Acidification of milk leads to the destruction of the internal structure of casein mycelia due to solubilization of K-casein (Lee W., Lucey J., 2010), as a result of acid coagulation, resulting in the formation of lactic gel.

The evolution of pH (Fig. 8) and titrable acidity (Fig. 9) is correlated with the intensity of lactic fermentation. Active and titratable acidity was determined over 15 days. During storage the pH values decrease on the first day being 4.7. At 5 days -4.6, at 10 days-4.3, at 15 days - 4.2. Results with decreasing tendency were obtained by other authors, Ahmet Ayar, 2014, Kailasapathy, 2008.

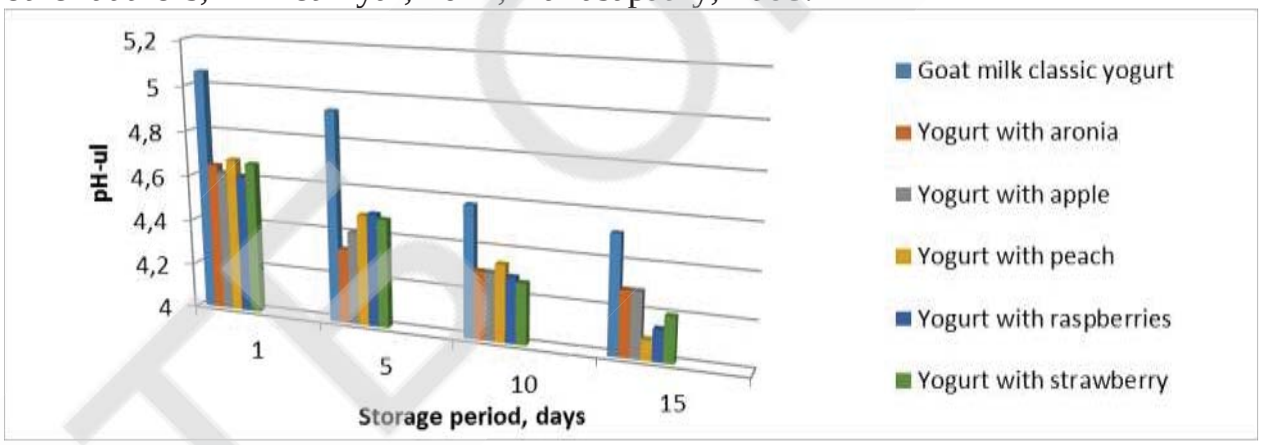

Figura 8. pH evolution of goat milk yogurt with blanched fruits during storage period

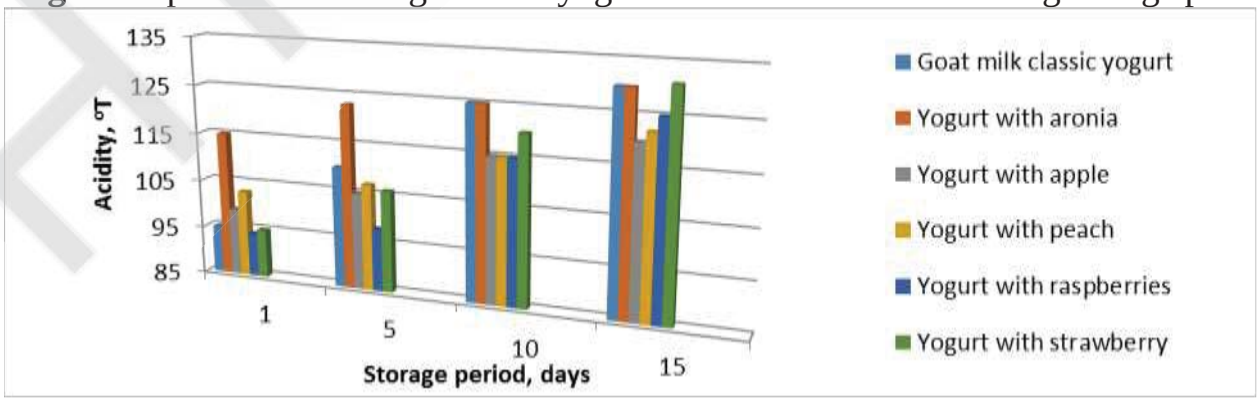

Figura 9. Titrable acidity evolution of goat milk yogurt with blanched fruits during storage period

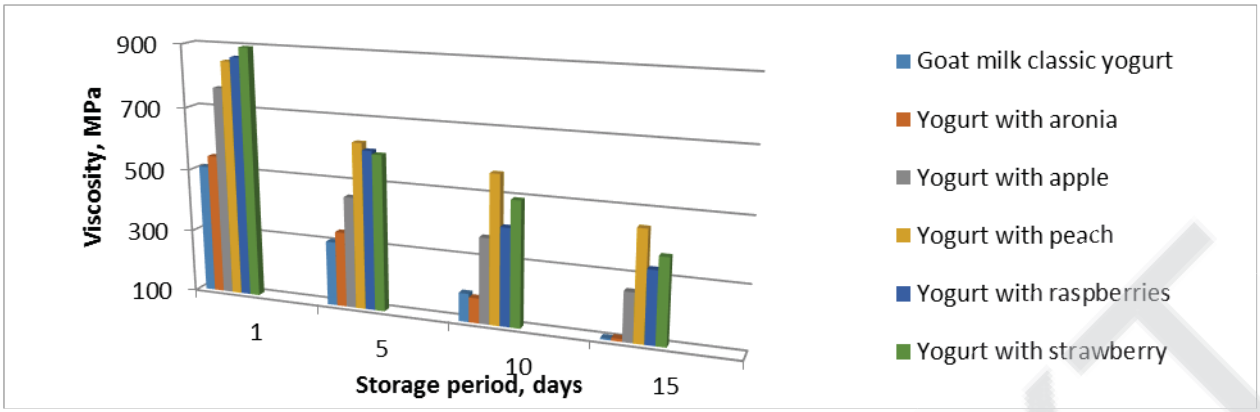

Figura 10. Viscosity evolution of goat milk yogurt with blanched fruits during storage period.

Yogurt gel is a type of soft solid product, and its network is a relative dynamic system, inclined towards rearrangement. The physical properties of yogurt can be explained using the model of interactions in casein micelle that includes the balance between attraction and rejection forces, [30]. The textural properties of the yogurt are influenced by several factors, some of the most important being the temperature and the duration of the heat treatment the fermentation temperature as well as the mass part of the total dry substance.

Minimum viscosity values were obtained for goat milk yogurt, followed by goat milk yogurt with blanched fruit. Goat milk due to its higher β-casein content forms a gel with a weaker network.

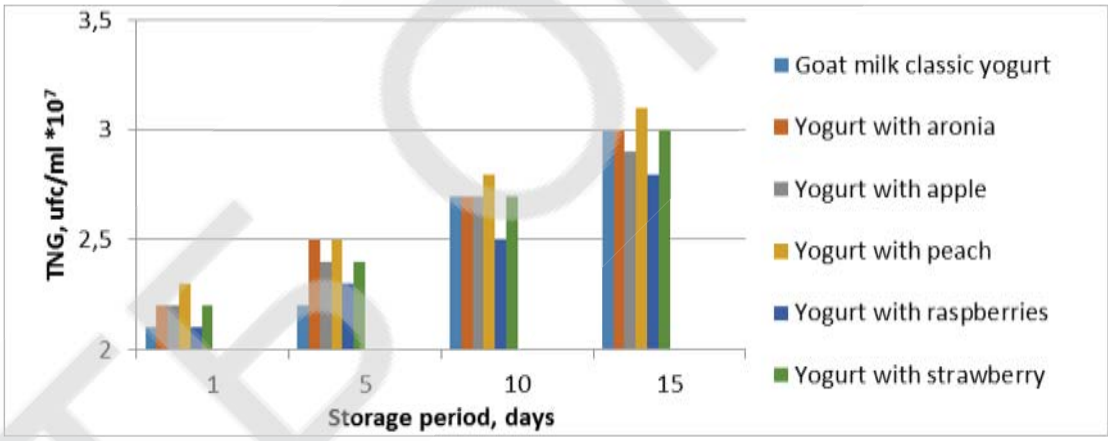

Figura 11. The total number of germs evolution of goat milk yogurt with blanched fruits during storage period.

The results obtained for the determination of the total number of germs for the yogurt samples with blanched fruits are satisfactory during the storage period of 10-12 days and fall within the values stipulated in the normative documents (GD 158, annex 4). While retaining NTG it started to grow above the allowable norms, the values being between 2.2 x 10^7 and 3.1x10^7.

V. Conclusion

Goat's milk yogurt with strawberries and raspberries have best preserved their organoleptic characteristics such as appearance, color, consistency, smell and taste.

Goat milk yogurt, the control sample, was found to have a minimum polyphenol content, and the maximum value was obtained for goat milk yogurt with aronia (187.1 mg / 100g) and 184 mg / 100g respectively for yogurt with blanched peach. The value

of the antioxidant capacity was higher for all yogurt samples with the addition of blanched fruits, the maximum value having the product with the addition of raspberries and strawberries (0.007 mg / 100g).

The physico-chemical and microbiological indices presented values that fall within the limits stipulated in the normative documents for this category of products, while retaining TNG began to grow above the allowable norms, the values being between 2.2 x 10^7 and 3.1x10^7.

The goat milk yogurt samples were kept at a temperature of 4 ± 2 ° C, in order to determine the practical period of storage. Organoleptic indices, pH and viscosity of the yogurt were determined during storage, which presented acceptable results over 15 days. The results of the microbiological indices presented satisfactory values for 10-12 days.

The practical period of storing of goat milk yogurt with the blenched fruit is estimated at 10-12 days.

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