STUDY FROM SANA FATTY ACIDS COMPOSITION OF SHEP'S MILK PRODUCT ENRICHED IN Ω3 AND Ω6

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Abstrac.:
This study aims to obtain both the product with acid, Sana, sheep's milk, and increase its value by biological enrichment of essential fatty acids. Acids. Fatty acids were analyzed by gas chromatography (GC) with flame ionization detection (FID), a Shimadzu GC-17A series gas-chromatograph, equipped with a 30m polyethylene glycol coated column (Alltech AT-WAX, 0.25mm I.D., 0.25µm film thickness). Ados fish oil 0.05% 0.10% .0.15% for raw milk, 3 sets of 5 samples of yogurt and 3 series sana 5 samples with added fish oil gradually. Analiza prin cazcromatografie a acizilor graşi a determinat următoareal rezultate:- Saturated fatty acid (S.F.A.,)-69.30 unsaturates fatty acid (M.U.FA) -18.30, polyunsaturated fatty acids (P.U.F.A).-4.25; Sana cu 0.15% adaos ulei de peşte:.S.F.A.-64,53, M.U.F.A.-21.48;-P.U.F.A.-5,76. It appears that during milk homogenization, pasteurization and fermentation losses nesminificative.

Key words: sana, fish oil, essential fatty acids

INTRODUCTION

Ewe's milk is different in structure and composition compared with milk of other animal species. Concentration in dry matter with 70% more than in sheep and goat milk. Although compared to buffalo milk fat percentage is about the same size differs in fat globuleleor smaller diameter which results in increased digestibility of their body. Single fat composition containing fatty acids with more than 10 carbon atoms and polyunsaturated fatty acids determines its proper digestion by the human body. Sheep's milk is a major provider of protein containing all essential and oiligozaharide aminoacitzii has the effect of increasing the nutritional and biological quality of dairy fermented dairy products.(K. Raynal-Ljutovac et all 2008).

Functional fermented foods are beneficial to health because of bioactive peptides released by probiotic microorganisms. (Nagendra P. Shah, 2007). Effect of continuous fermentation of dairy products was in peritoneal macrophages. In conclusion, it was demonstrated

immunomodulatory and protective effects of the bronchi, mammary gland by removing substances harmful substances, pathological factors. (A. de Moreno de LeBlanca, 2008). Lactic bacteria are increasingly being studied because it offers a wide range of effect function through both their work and by substances that are formed in their action. Oenococci bacteria that may be considered for further evaluation in the prevention or treatment for intestinal pathogen-related diseases, allergy or inflammation. (Benoît Foligné et, all 2010).

Correlation estimates and pleiotropicQTLfindings suggest that increasing one specific fatty acid could lead to modifications of the whole FA profile whoseeffects on nutritional value of milk should be continuously (A. Carta et all, 2008). Increasing proportions of fish oil in the oil mixture supplement alleviated the depression, when expressed either as proportions and yields of de novo fatty acids or as milk fat proportion and yield (D.L. Palmquist et all, 2006) 3 LC-PUFA important regulators ofinflammatory response their reduction in diets containing VO as a single lipid source may affect some immune response and inflammatory processes, particularly when those alternative oils .are rich in linoleic acid polyunsaturated fatty acids in diets are effective in reducing (D. Montero et all, 2010l),the initiation of colon carcinogenesis. It is possible that the used concentrations of fish oil in our study were high enough to have reached a plateau after which the concentration of the n-3 PUFAs no longer has an influence on colon carcinogenesis. (Vincent A et all,2009)

MATERIAL AND METODS

Process Technology:-Description of technological process:

Reception quality: Sheep milk-fat features.i following: - 6.1%, protein substances: - 4.5%, lactose: -6.3%, fat-free basis: -11.7;Quantitative Front: -25 l sheep milk; Cleanup: centrifugal and filtration. Addition of fish oil: added to fish oil was purchased from SC EXPORT-IMPORT Hofigal S.A. It presents in capsule form. A coated capsule contains 400.00 mg. fish oil is not high in essential fatty acids (Omega 3: EPA, eicosapentaenoic acid, docosahexaenoic aicd DHA and Omega-6: linoleic acid) and excipients (aerosil, hydroxypropy lmethyl cellulose, gum arabic, fructose, magnesium carbonate, gluconate delta lactones , polivnilpirolidonă K, talk, vanillin) to 431.00 mg.A fish oil was added in increasing proportions of potting process to determine its fat molecules in milk of sheep by homogenization and milk composition is enriched in developing Essential fatty acids during pasteurization and preparation for manufacture. It focuses on both the development of essential fatty acids concentration during the technological

process and organoleptic characteristics of the particular taste and added aromă.Sa 30, 60 and 90 fish oil capsules corresponding percentages: 0.05%, 0.10% and 0.15%. The capsules were dissolved in sheep's milk to 60 degrees C and embedded in raw milk followed by homogenization, pasteurization.Homogenisation:-the three-stage homogenizer; Pasteurization::-T:-85 °C;t -30 min; Cooling:-T-℃; Sowing:-type lactic culture CHN 11, Cristian Hansen; Thermostatic - T: 24 ÷ 26 ° C, t: 16 h;Pre-cooling:-T: 23 º C, t: 30min.

Cooling:-T 4-8℃

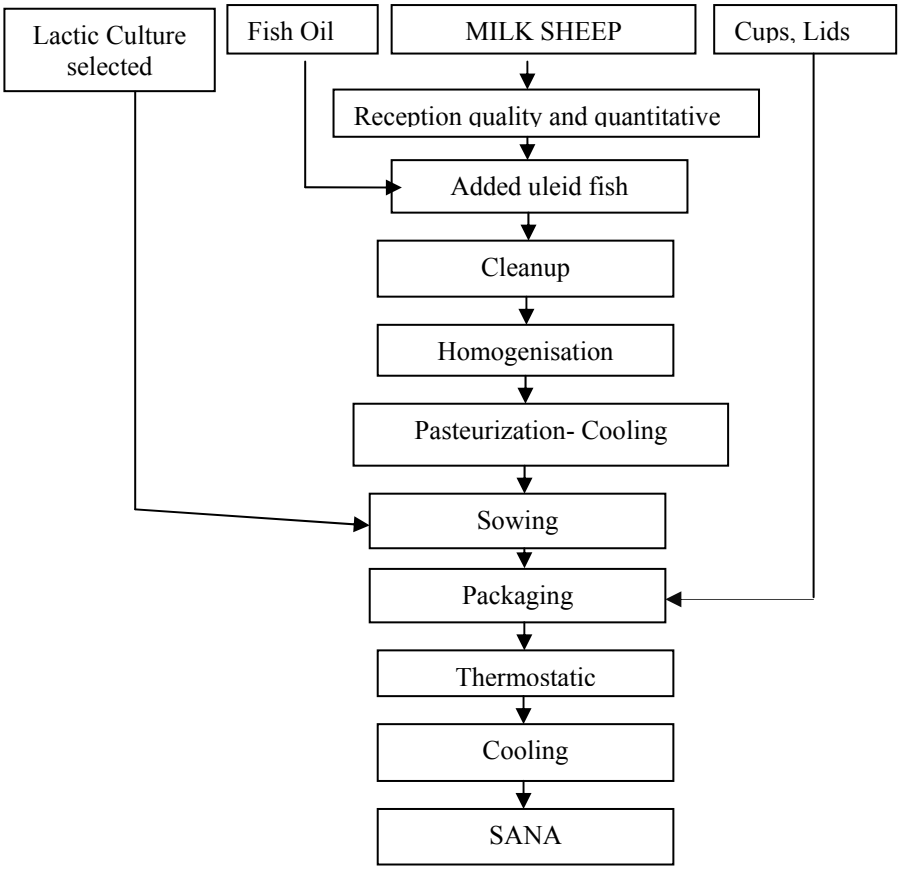

Fig. 1 The technological scheme of production of sanat from sheep's milk

Analytical methods:

- Sensory analysis:-(S.T.A.S. 6345/74)
- Determination of titratable acidity:- (S.R. ISO 6091/2008)

- Determination of fat percentage- (S.T.A.S. 6352/1-73)
- Gas-chromatographic analysis of fatty acids:
- Physical-chemical milk:- lactostar device

Milk fat was extracted by using the following protocol: About 1ml of milk samples were mixed with 0,6 ml ammonia 25%, 2ml EtOH, 4ml Ethyl ether and 4 ml hexane and then agitated for 2-3min. After this process the lower layer (the ammonia layer) was discarded. Following this step the mixture was passed through a cellulose filter with Na2So4 and then brought to dryness.

Transesterification::Fatty acids were converted to methyl esters by reaction with boron trifluoride/methanol at 80ºC for two hours in a closed Pyrex glass tube. The content was transfered into a separatory funell.

The methyl ester extraction:The extraction was made using 10 ml hexane. The hexanic fractions collected were dried using anhydrous sodium sulfate, filtered, concentrated under a nitrogen stream and finally re-eluted in 1 mL hexane. Fatty acids were analyzed by gas chromatography (GC) with flame ionization detection (FID). A 1µL sample was injected into the Shimadzu GC-17A series gas-chromatograph, equipped with a 30m polyethylene glycol coated column (Alltech AT-WAX, 0.25mm I.D., 0.25µm film thickness). Helium was used as the carrier gas at a pressure of 147 kPa. The injector and detector temperatures were set at 260ºC. For the oven temperature the following program was used: 70ºC for 2 min. then raised to 150ºC at 10ºC/ min. rate and held at 150ºC for 3min., then further raised up to 235ºC at a 4ºC/min.

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RESULTS AND DICUSSION

- Sensory characteristics: Taste products were analyzed for three weeks by 5 people. onsistency is a good characteristic of sana from sheep's milk products focused on the dry weight. Creamy without removal of whey. Product taste and aroma are affected as fish oil taste and characteristic odor prints.The taste of fish oil found at a concentration of 0.1% is barely perceptible and the concentration

0.15is perceptible fish taste. By maintaining the temperature of refrigerated fish taste and flavor disappears as: -3 days in products containing 0.1% fish oil, 7 days 0.15% products with added fish oil.This disadvantage is reduced by long-term high-pasteurized. Temperature-85 ° C for-30 min. in pond. Sheep's milk is pasteurized at high temperatures exacerbated by diacetyl flavor and aroma that is transmitted and products. ana, the finished product tastes slightly sour, like the cream.

- Physico-chemical: Physico-chemical parameters for raw sheep's milk are presented in Table no.1. and pysiochemical parameters for technological flow and finite prdus are presented in Table. 2

Table 1

Physico-chemical parameters for raw sheep's milk

Assortment	Raw sheep's milk							
	Fat %	Acidity °T	pH	Density 20°C g/l	Non-fat dry %	Protein substances %	Lactose %	Peroxidase
Sana 0	6,10	21	6,65	1032,9	11,5	4,5	6,5	negative
Sana 0,05	6,15	21	6,67	1032,3	11,7	4,5	6,3	negative
Sana 0,10	6,20	22	6,65	1032,7	11,5	4,7	6,3	negative
Sana 0,15	6,25	21	6,67	1032,5	11,5	4,5	6,3	negative

Table 2

Physiochemical parameters for technological flow and finished product

Assortment	Inoculation		Thermostatic		Finished product		
	T °C	Lactic culture	Fat %	Acidity °T	Temperature °C	Time h	Acidity °T
Sana 0	28	CHN 11	6,10	98	27	16	88
Sana 0,05	27	CHN 11	6,15	102	27	16	90
Sana 0,10	28	CHN 11	6,20	104	27	16	90
Sana 0,15	27	CHN 11	6,25	98	27	16	88

- Gas-chromatographic analysis: for sheep's milk and sana depending on the percentage of fish oil added. The results are presented in table 3, 4 and figures 2.3.

Table 3

Percentage of fatty acid in SANA

Fatty Acid	Abrev iation	Sheep milk				Sana		
		Raw milk	Pasteurized milk			0,05%	0,10%	0,15%
			0,05%	0,10%	0,15%			
Butyric	4:0	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Caproic	6:0	0,88	0,31	0,67	n.d.	n.d.	n.d.	n.d.
Caprilic	8:0	3,05	2,24	2,51	1,84	1,62	1,93	1,26
Capric	10:0	14,00	11,71	11,45	10,96	10,39	11,31	10,81
Lauric	12:0	8,91	7,76	7,55	7,30	7,33	7,65	7,62
Miristic	14:0	14,97	14,12	13,80	13,83	14,26	14,02	14,17
Miristoleic	14:1	0,34	0,31	0,32	0,36	0,31	0,32	0,25
Pentadecanoic	15:0	1,22	1,21	1,19	1,25	1,26	1,21	1,27
Cis-10-pentadecanoic	15:1	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Palmitic	16:0	24,99	25,52	25,14	26,20	26,93	25,63	26,10
Palmitoleic	16:1	1,71	1,63	1,77	1,65	1,84	1,67	1,69
Heptadecanoic	17:0	0,45	0,52	0,50	0,54	0,54	0,52	0,52
Cis-10-heptadecanoic	17:1	0,32	0,33	0,33	0,34	0,37	0,34	0,34
Stearic	18:0	1,69	2,33	2,07	2,75	2,28	2,34	2,76
Oleic	18:1	14,45	17,03	17,04	17,65	18,19	17,26	17,41
Elaidic	18:1iso	1,78	2,22	2,17	2,16	2,31	2,28	2,12
Linoleic	18:2	2,55	2,68	2,75	3,01	2,79	2,90	3,24
Linolenic	18:3n6	0,97	1,00	1,06	1,10	1,12	1,25	1,30
γ-Linolenic	18:3n3	0,72	0,84	0,96	0,96	0,95	1,04	1,21

n.d. – not detected

Table 4

Percentage of fatty acid groups in SANA

Fatty acid groups	Sheep milk				Sana		
	Raw milk	Pasteurized milk			0,05 %	0,10 %	0,15 %
		0,05%	0,10%	0,15%			
S.F.A.	69.30	65.75	64.92	64.72	64,65	64,63	64,53
M.U.F.A	18.30	21.21	21.32	21.83	21,54	22,67	21,49
P.U.F.A.	4.37	4.42	4.82	5.04	4,72	5,35	5,76

S.F.A. – Saturated Fatty Acids ;
M.U.F.A. – Mono Unsaturated Fatty Acids;
P.U.F.A. – Poly Unsaturated

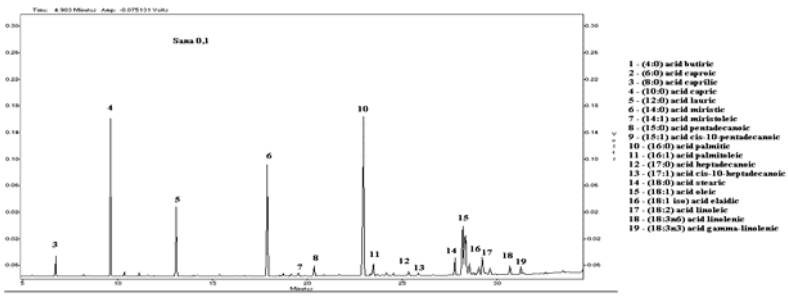

Fig. 2 The concentration of fatty acids from sana 0,05%

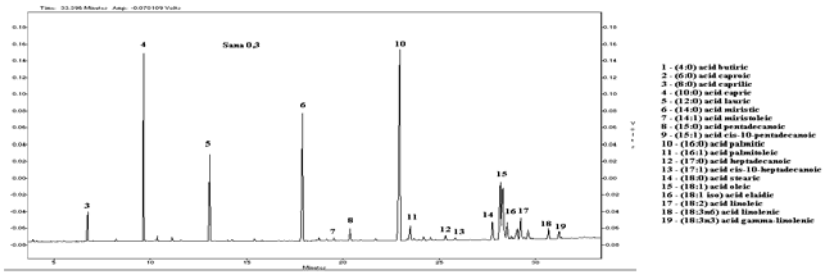

Fig. 3 The concentration of fatty acids acids from sana 0,15

CONCLUSION

Addition of fish oil to achieve an increase in the concentration of essential fatty acids in guiding sana proportional to the percentage of fish oil added. The biological value of product improvement achieved without amending its sensory qualities.

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