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EFFECT OF DRAINING METHOD ON THE QUALITY OF KAREISH CHEESE.

Blassy, Kholoud I.M. * and M.M. Ismail **
* Dairy Dept.,Fac., of Agric., Sues Canal Univ.
**Dairy Technology Dept., Animal Prod. Res. Inst., Agric., Res., Center.

ABSTRACT

Kareish cheese was made from pasteurized skim cow milk (0.4% fat). The curd was divided into three equal parts, the first was filled traditionally in mats (treatment A_1) whereas the second in wooden frames (treatment B_1) and the third in cloth bags (treatment C_1). The whey was separately collected through the 24 hours. The resultant cheese of the three treatments were divided into two equal portions, the first one was packed in plastic jars without whey (treatments A_1, B_1, C_1) while the other pickled with its whey (treatments A_2, B_2, C_2). All treatments were kept in refrigerator (6±1°C) for 28days and analyzed for some chemical, microbial and organoleptic properties.

Cheese yield was higher in treatment C_1 than that of treatments A_1 and B_1. Acidity, TS, fat, Fat/DM, salt, ash, TN and TN/DM values decreased in treatment A_1 as compared with treatments B_1 and C_1. Soluble nitrogen, SN/TN and NPN/TN values of treatment B_1 were higher than those of treatments A_1 and C_1. Bacterial counts, proteylitc bacteria and moulds and yeast were higher in treatment A_1. Cheese of treatments A_1 and B_1 obtained the highest scoring points for its sensory properties when fresh and after 7 days of storage period.

Acidity, TS, fat, Fat/DM, TN, NPN, total bacterial counts, proteolytic bacteria, moulds and yeast and organoleptic properties scores were lower in Kareish cheese stored in whey as compared with cheese stored without whey. Cheese storage in whey increased salt, ash and SN/TN. Whey acidity of treatment B_1 were higher than that of treatment A_1 and C_1. Total solids and TN contents of whey increased in treatment C_1. No clear differences in salt content were observed between different whey treatments. It is concluded that Kareish cheese with good quality can be made from skim cow milk using cloth bags for filtration.

Keywords: Kareish cheese- wooden frames- mats- cloth bags.

INTRODUCTION

In Egypt Kareish cheese consider one of the most popular white soft cheese which is mostly produced from skim buffaloe milk and depends in its manufacturing on acid coagulation by the action of lactic acid bacteria. The production of Kareish cheese is seasonal during winter and spring, the surplus of the cheese is stored in the very salty emulsion known as Mish, for preservation and supplying the farms family with cheese during summer and autumn. Kareish cheese has a high protein content and makes a balanced meal when mixed with some vegetable oil and fresh pieces of tomato (Youssef *et al.*, 1981).

It is now regarded as a medical diet for many patients. In traditional method for making Kareish cheese in farms, fresh buffaloe's milk was left for one or two days in earthenware pots at room temperature, the cream is separated by gravity and the partly skimmed milk (1.0-2.5% fat) is naturally coagulated by the wild lactic acid bacteria. The mats used for whey drainage

characterized by its short shelf life as a result of microbial contamination. On the other side, when sterilized cloth bags were used to whey ladling, the shelf life of Kareish cheese increased (Ismail and El-Demerdash 2003). So the aim of this study was the following points:

One- Producing of Kareish cheese from pasteurized cow skim milk.

Two- To produce hygienic Kareish cheese from pasteurized skim milk, it demands another method for cheese hoping, since traditional mats are not easy to heat sterilized.

Three- Storage the cheese in whey at refrigerator temperature to study their shelf life.

MATERIALS AND METHODS

Fresh morning cow's milk was obtained from El-Serw Animal Production Research Station, Animal Production Research Institute, Ministry of Agric. The milk was warmed to 40°C, separated with Alfa-Laval separator. The resulted cow skim milk had 0.17%acidity, 6.65 pH, 10.040% TS, 0.4% fat and 3.010% protein.

Kareish cheese was made as described by Ezzel-Din (1978). Skim milk was pasteurized at 70±2°C for 30 min. then immediately cooled to 45°C and inoculated with 1% yoghurt starter (*Streptococcus salivarius* subsp *thermophilus* and *Lactobacillus delbruckii* subsp *bulgaricus* 1:1). The inoculated milk was divided into 3 equal portions and incubated at 40°C. After complete coagulation, The curd of first portion was ladled in mats as in primitive methcd (treatment A_1) and 4%salt were added to the curd whereas the curd of the second portion was scooped into wooden frames lined with muslin cloth as in Domiati cheese (treatment B_1) and also 4% salt were sprinkled between the curd layers and after 3 hours the frames were covered with wooden covers (about 25%milk weight). The curd of third portion was salted with 4% salt and thoroughly stirred and drained in cloth bags as Labneh manufacture (treatment C_1). The resulting whey from each curd was collected and kept for pickling. After 24 hours, Kareish cheese were taken out and weighed then the cheese of every treatment was divided into 2 equal portions. The first portion was packed in plastic jars without adding whey (treatments A_1, B_1, C_1) whereas the other was put into plastic containers, which filled with the resultant whey (treatments A_2, B_2, C_2). Cloth bags cheese was shaped as ball, left two hours on dry muslin, then similarly filled in jars with its whey or in plastic bags. The all cans were kept in refrigerator at 6±1°C for 28 days. Samples were taken after 24 h. (fresh), 7,14,21 and 28 days.

Acidity, pH, total solids (TS), fat, total nitrogen (TN), soluble nitrogen (SN), non-protein-nitrogen (NPN), salt and ash contents of milk and cheese samples were measured according to Ling (1963). Total viable, proteolytic bacterial and mould and yeast counts were determined as APHA (1985). The organoleptic properties were assessed as suggested by ADSA(1987). The obtained results were statistically analyzed using a software package (SAS 1990) based on analysis of variance. When F-test was significant, least

significant difference was calculated according to Duncan (1955) for the comparison between means.

RESULTS AND DISCUSSION

Yield of Kareish cheese:

The use of cloth bags for whey drainage (treatment C_1) increased the yield of Kareish cheese as compared with the other tow methods. It seems that cloth bags retained all the particles of the curd. The use of wooden frames (treatment B_1) decreased the yield as compared with treatment (C_1). This is may be due to the use of cover of the frame, which pressed the curd for 24 hours resulting in more whey and less cheese. The yield of treatment (A_1) was higher than (B_1) and lower than (C_1). The yield values of treatments A_1, B_1 and C_1 were within the values reported by other researchers (Ibrahim *et al.*, 1990).

Chemical composition of Kareish cheese:

It is observed from table (1) that acidity, TS, fat, fat/DM, salt and ash contents of Kareish cheese gradually increased during storage period Similar trends were found by Abu Dawood (2002). No significant differences were noted in acidity values between different treatments whereas the effect of storage time on acidity values were highly significant ($P<0.001$). Also, pickling of Kareish cheese in low salt whey (about 2.5%) had no significant effect on acidity percentages. On the other hand, TS of treatment C_1 were slightly higher than that of treatments A_1 and B_1.

Storage of cheese in resulted whey decreased TS contents. This was attributed to low salt concentration of whey, which lowered whey exuding and increased cheese capacity of whey absorption. Results in table (1) cleared that, slight decrease in fat, fat/DM, salt and ash contents was found when mats (treatment A_1) were used to whey drainage. Also, fat and fat/DM values decreased in treatments A_2, B_2 and C_2 (pickling in whey). In contrast, salt and ash contents increased when Kareish cheese were stored in its whey. The increase was mainly due to the amount of salt absorbed from the whey resulting from the equilibrium, which took place between the cheese and the pickling solution (Abu Dawood and Abdou 1973). The differences in TS and fat/DM values between treatments and the effect of storage time were highly significant ($P<0.001$). The values of fat/DM, moisture and protein of Kareish cheese of treatment C_1 fall in the rang of the values stated by Egyptian Standards 1008-2000 (fat/DM < 10%, moisture < 75%, protein > 10%).

Nitrogenous compounds of Kareish cheese:

Data found in table (2) cleared that utilization of various curd drainage methods in Kareish cheese manufacture had no significant effect on TN and TN/DM values.

Storage of cheese in resulted whey decreased TN contents. This may be explaining by the high moisture contents of Kareish cheese as a result of whey absorption and losses of some protein in the whey.

The soluble nitrogen (SN), SN/TN, non-protein nitrogen and NPN/TN values of all treatments gradually increased during storage period. This was attributed to continuous degradation of cheese protein. These results are in

agreement with those reported by Omar *et al* (1999). No significant differences were observed in SN contents of different Kareish cheese treatments except slight increase was found in C_2 treatment (cloth bags-whey storage). Using cloth bags to curd ladling (treatment C_1) decreased SN/TN, NPN and NPN/TN values of these resultants cheese. At the mean time, pickling of cheese in its whey increased SN/TN percents and decreased NPN and NPN/TN values, which may be due to losses of nitrogen components in whey. The statistical analysis of variance (Table 6) showed that the differences in SN/TN, NPN and NPN/TN between treatments and the effect of storage time were highly significant ($P<0.001$).

Table (1): Effect of method of whey drainage on yield and some chemical properties of Kareish cheese.

Treatment		Storage period (days)	Yield %	Acidity %	TS%	Fat %	Fat/ DM%	Salt %	Ash %
Without pickling	A_1	0	19.94	0.90	21.586	1.5	6.101	1.287	1.821
		7	-	1.239	22.193	1.8	7.144	1.345	1.973
		14	-	1.611	23.467	1.8	6.800	1.462	2.021
		21	-	1.794	23.626	2.0	7.511	1.521	2.135
		28	-	1.985	24.024	2.0	7.400	1.584	2.206
	B_1	0	18.24	0.96	22.266	1.7	6.728	1.462	1.929
		7	-	1.386	23.042	1.9	7.295	1.579	2.048
		14	-	1.709	23.807	2.0	7.460	1.755	2.204
		21	-	1.924	24.530	2.2	7.991	1.793	2.311
		28	-	2.101	24.384	2.3	8.399	1.813	2.422
	C_1	0	21.50	0.93	23.132	1.7	6.505	1.404	1.987
		7	-	1.285	23.973	2.0	7.414	1.521	2.017
		14	-	1.675	24.128	2.1	7.741	1.592	2.183
		21	-	1.805	24.541	2.2	7.988	1.696	2.256
		28	-	2.060	24.913	2.3	8.239	1.755	2.356
With pickling	A_2	0	-	0.90	21.586	1.5	6.101	1.287	1.821
		7	-	1.201	17.326	0.6	2.951	1.696	2.252
		14	-	1.601	18.375	0.9	4.210	1.813	2.452
		21	-	1.784	19.608	1.0	4.423	1.953	2.654
		28	-	1.980	19.715	1.1	4.842	1.989	2.751
	B_2	0	-	0.96	22.266	1.7	6.728	1.462	1.929
		7	-	1.273	18.234	0.9	4.238	1.931	2.680
		14	-	1.692	18.716	1.1	5.065	2.106	2.798
		21	-	1.873	19.157	1.2	5.415	2.197	2.833
		28	-	2.050	19.871	1.3	5.684	2.223	2.947
	C_2	0	-	0.93	23.132	1.7	6.505	1.404	1.987
		7	-	1.198	17.487	1.0	4.881	1.805	2.709
		14	-	1.584	18.771	1.1	5.052	1.989	2.794
		21	-	1.776	19.844	1.3	5.690	2.047	2.812
		28	-	1.973	19.876	1.3	5.682	2.127	2.893

Treatment A_1: Cheese from mats (without pickling).
Treatment B_1: Cheese from wooden frames (without pickling).
Treatment C_1: Cheese from cloth bags (without pickling).
Treatment A_2: Cheese from mats (with pickling).
Treatment B_2: Cheese from wooden frames (with pickling).
Treatment C_2: Cheese from cloth bags (with pickling).

Table (2): Nitrogenous compounds of Kareish cheese as affected by curd draining method and storage in whey.

Treatments		Storage period (days)	TN%	TN/DM %	SN%	SN/TN %	NPN%	NPN/TN %
Without pickling	A_1	0	2.058	8.371	0.355	17.250	0.074	3.595
		7	2.128	8.447	0.410	19.267	0.090	4.229
		14	2.270	8.577	0.470	20.705	0.107	4.714
		21	2.300	8.638	0.517	22.473	0.125	5.435
		28	2.398	8.873	0.542	22.602	0.136	5.671
	B_1	0	2.198	8.699	0.403	18.335	0.077	3.503
		7	2.240	8.601	0.448	20.000	0.089	3.973
		14	2.317	8.643	0.494	21.321	0.110	4.747
		21	2.338	8.492	0.534	22.840	0.122	5.218
		28	2.460	8.983	0.575	23.374	0.133	5.406
	C_1	0	2.218	8.488	0.349	15.735	0.065	2.930
		7	2.304	8.542	0.392	17.014	0.079	3.429
		14	2.396	8.832	0.446	18.614	0.093	3.881
		21	2.430	8.823	0.489	20.123	0.105	4.321
		28	2.478	8.877	0.521	21.025	0.121	4.883
With pickling	A_2	0	2.058	8.371	0.355	17.250	0.074	3.595
		7	1.501	7.385	0.379	25.250	0.068	4.530
		14	1.650	7.719	0.440	26.667	0.080	4.848
		21	1.778	7.864	0.482	27.109	0.088	4.949
		28	1.882	8.725	0.533	28.321	0.103	5.473
	B_2	0	2.198	8.699	0.403	18.335	0.077	3.503
		7	1.532	7.215	0.417	27.219	0.065	4.243
		14	1.694	7.801	0.459	27.096	0.077	4.545
		21	1.322	8.223	0.501	27.497	0.089	4.885
		28	2.000	8.745	0.560	28.000	0101	5.050
	C_2	0	2.218	8.488	0.349	15.735	0.065	2.930
		7	1.610	7.858	0.413	25.652	0.057	3.540
		14	1.710	7.852	0.455	26.608	0.068	3.977
		21	1.855	8.120	0.511	27.547	0.075	4.043
		28	2.015	9.245	0.558	27.692	0.089	4.417

Treatment A_1: Cheese from mats (without pickling).
Treatment B_1: Cheese from wooden frames (without pickling).
Treatment C_1: Cheese from cloth bags (without pickling).
Treatment A_2: Cheese from mats (with pickling).
Treatment B_2: Cheese from wooden frames (with pickling).
Treatment C_2: Cheese from cloth bags (with pickling).

Microbiological properties of Kareish cheese:

It is obviously shown from the results in table (4) that Kareish cheese (treatment A_1) made using mats (traditional method) had higher total viable, proteolytic bacteria and mould and yeast counts than other treatments. Treatment C_1 (cloth bags) had the lowest microbial count when fresh and during storage period.

On the other hand, pickling of cheese sharply decreased total, proteolytic and mould and yeast counts. In all treatments total and proteolytic counts reduced during storage period, while mould and yeast showed an opposite trend. This may be attributed to the effect of high acidity on the

different microbial groups (Hammer and Bable, 1957, Foster, *et al.*, 1958 and Ibrahim *et al.*, 1990). On the contrary, Abou-Dawood (1996) indicated that total bacterial count increased in Kareish cheese during storage period (at 6°C) until deterioration after 8 days storage. Table (6) refereed to the statistical analysis of the effect of curd filtration and storage in whey on microbial groups of cheese was highly significant ($P<0.001$).

Table (3): Effect of drainage method on some microbial counts of Kareish cheese.

Microbial Groups	Storage period (days)	Treatments					
		A_1	B_1	C_1	A_2	B_2	C_2
Total viable count ($x10^6$)	0	631	518	483	631	518	483
	7	364	202	181	214	170	145
	14	214	132	93	110	91	82
	21	133	98	67	87	51	46
	28	60	35	27	37	18	16
Proteolytic bacteria count ($x10^3$)	0	28	22	19	28	22	19
	7	15	12	12	6	5	3
	14	8	7	5	3	3	2
	21	6	5	4	2	3	1
	28	4	4	2	2	1	0
Mould and Yeast count ($x10^2$)	0	11	8	6	11	8	6
	7	44	25	14	11	7	5
	14	161	146	60	20	13	9
	21	291	265	121	31	22	15
	28	364	340	197	44	33	21

Analysis of Kareish cheese whey:

Results of whey analysis were tabulated in table (5). It is noticed that no significant differences in acidity, pH and salt values of cheese whey between different treatments. Acidity percentages of treatments A_2, B_2 and C_2 after 21 days of storage were1.08, 1.13 and 1.01% respectively. The losses of TS and TN contents in drained fresh whey were slightly higher in treatment A_2 (mats) than those of treatments B_2 and C_2. The differences in TS and TN between whey treatments were significant ($P<0.05$).

Organoleptic evaluation:

Organoleptic evaluation (Table 5) of Kareish cheese cleared that treatments A_1 and B_1 gained higher score for appearance, body, texture and flavor than treatment C_1 at zero time and after 7 days whereas after 14 days of storage period the opposite trend was found. After 14 days of storage period sensory evaluation of treatments A_1 (mats) and B_1 (wooden frames) was not evaluated because of cheese deterioration.

Pickling of cheese decreased the organoleptic properties especially body and texture. This may be due to the high moisture content of Kareish cheese. The differences in appearance, body, texture, flavor and total score points between treatments and the effect of storage time were highly significant ($P<0.001$).

Table (4): Chemical analyses of Kareish cheese whey.

Treatment	Storage period (days)	Acidity %	pH	TS %	TN %	Salt %
A_2	0	0.60	5.03	8.127	0.069	2.164
	7	0.91	4.70	8.515	0.090	2.186
	14	0.97	4.62	8.808	0.100	2.205
	21	1.08	4.57	8.960	0.115	2.257
	28	1.17	4.51	9.301	0.141	2.340
B_2	0	0.68	5.01	8.054	0.061	2.223
	7	0.95	4.57	8.252	0.068	2.252
	14	1.01	4.52	8.695	0.087	2.282
	21	1.13	4.48	8.791	0.114	2.314
	28	1.35	4.46	8.881	0.148	2.369
C_2	0	0.58	5.11	8.044	0.058	2.202
	7	0.75	4.28	8.858	0.096	2.198
	14	0.88	4.75	8.989	0.110	2.256
	21	1.01	4.73	9.252	0.133	2.299
	28	1.10	4.71	9.627	0.157	2.361

Treatment A_2: Whey from mats
Treatment B_2: Whey from wooden frames
Treatment C_2: Whey from cloth bags

Table (5): Organoleptic properties of Kareish cheese as affected by curd draining method and storage in whey.

Organoleptic Properties	Storage period (days)	Treatments					
		A_1	B_1	C_1	A_2	B_2	C_2
Appearance (15)	0	13	12	11	13	12	11
	7	13	13	12	12	11	9
	14	12	12	12	12	12	10
	21	-	-	12	11	12	9
	28	-	-	10	11	11	9
Body & Texture (35)	0	31	32	29	31	32	29
	7	30	31	30	23	28	20
	14	29	29	30	24	28	20
	21	-	-	29	21	26	18
	28	-	-	30	20	23	16
Flavour (50)	0	48	47	46	48	47	46
	7	46	45	46	44	43	41
	14	41	40	46	40	40	38
	21	-	-	45	39	37	38
	28	-	-	41	35	35	35
Total score (100)	0	92	91	86	92	91	86
	7	89	89	88	79	82	70
	14	82	81	88	76	80	68
	21	-	-	86	71	75	65
	28	-	-	81	66	69	60

Table (6): Analysis of variance of the effect of curd draining method and cheese pickling on some chemical, microbial and organoleptic properties of Kareish cheese and resulted whey.

Source of variation	Degree of freedom	F value											
		Acidity	TS	Fat	Fat/DM	Ash	Salt	TN	TN/DM	SN	SN/TN	NPN	NPN/TN
Treatments (T)	5	0.31	354.73***	14.45***	114.14***	6.51***	3.51***	4.85***	6.44***	0.14	843.77***	6.21***	9.78***
Storage time (S)	4	10.28***	39.89***	1.26	12.42***	3:35**	2.20*	1.12	8.04***	1.82	458.39***	11.93***	25.96***
T x S	20	0.00	4.00***	0.34	2.95***	0.00	0.00	0.06	0.91	0.00	0.00	0.94	0.32
MS of error	--	0.2500	0.250123	0.2438	0.2501235	0.25	0.24	0.250	.250	0.040	0.24679	0.0004	0.25000

Source of variation	Degree of freedom	F value											
		Total count	Proteolyt-ic bacteria	Mould& Yeast	Acidity/whey	pH/ whey	TS/ whey	TN/ whey	Salt/ whey	Organoleptic properties			
										Appe.	Body-texture	Flavor	Total
Treatments (T)	5	9591.93***	37.88***	9003.74***	2.40	0.88	3.46*	4.17*	0.31	3.89***	70.10***	30.77***	227.91***
Storage time (S)	4	50380.99***	113.32***	9133.74***	11.04***	2.75*	8.82***	22.45***	0.94	1.46	29.10***	46.54***	172.41***
T x S	20	0.00	0.00	2460.29***	0.13	0.08	0.36	0.27	0.01	0.00	0.00	0.00	0.00
MS of error	--	9.000	68.1481	7.85185	0.400	0.153	0.2500	0.0004	0.040	4.000	4.000	4.000	4.000

Significant difference at P<(* 0.05, ** 0.01, ***0.001)

From the above results, it can be concluded that Kareish cheese can be made from cow skim milk using cloth bags for whey filtration. Cloth bags can be easy washed and sterilized so the resulted Kareish cheese have long shelf life and having the same flavour as compared with Kareish cheese resulted from mats or wooden frames. Also Kareish cheese produced by using cloth bags have high spreedability property, which is expected to be preferred for many consumers. More experiments are required to pickle the Kareish cheese in higher salt concentration whey to preserve the cheese for longer time.

REFERENCES

Abou Dawood,S.A.I.(2002).Survival of nonencapsulated and encapsulated *Bifidobacterium bifidum* in probiotic Kareish cheese. Egyptian J.Dairy Sci.,30:43-52.

Abou Dawood, S. A. I. (1996). Use of species as natural preservatives for some dairy products. M.Sc.thesis. Faculty of Agric.,Cairo Univ.

Abou Dawood, A. E. and S. A. Abdou (1973).The effect of adding sodium citrate to skim milk on the quality, chemical changes and yield of the cheese (Kareish) during pickling. Egyptian J. Dairy Sci.,1:141-147.

ADSA (1987). American Dairy Science Association. Score card for cheese, Champaign, TL.P.84.

APHA (1985).American Public Health Association. Standard Methods for the Examination of Dairy Products. New York.

Duncan, D. B. (1955).Multiple Range and Multiple F-test. Biometrics, 11:1-42.

Egyptian Standards 1008-2000: Soft Cheese, Part 4: Kareish cheese, Egyptian Organization for Standardization and Quality Control.

Ezzel-Din,A.Y.(1978).Studies on Kareish cheese making. M.Sc.Thesis,Cairo University.

Foster,E.M.,Neslon,F. E.; A. Speck; R. N. Doctsch and J.C. Olson (1958). Dairy Microbiology. MacMillan Co. Ltd. London.

Hammer,B.W. and F.J. Babel (1957).Dairy Bacteriology-4th Ed. John Wiley and Sons,INC. Publishers,Chapman and Hall, Limited, London.

Ibrahim,S.A.; M.A. El-Batawy and S.A. Fikry (1990).Utilization of buttermilk in making Kareish cheese. Egyptian J.Dairy Sci., 18: 95 -105.

Isamil,M.M. and M. E. El-Demerdash (2003). Effect of milk type and coagulant on physical properties, yield. Chemical composition and organoleptic properties of Kareish cheese. Egypt. J. Appl. Sci.; 18 (8) 240-253.

Ling, E.R. (1963). A text book of Dairy Chemistry. 2, Practical,3rd Ed., Champan and Hall, London.

Omar,M.M;Kiesner,C.and El-Nour,A.M.A.(1999).Ripening time estimation of Kareish cheese.Nuhrung, 43(1)34-48.

SAS(1991).SAS User'sguide:statistics SAS Inst, Inc,Cary, NC.

Youssef, A. A.; F. A. Salama and A. E. Salam (1981). Effect of some.technological factors on the manufacture of Kareish cheese from reconstituted skim milk. Egyptian J.Dairy Sci., 9:171-180.

تأثير طريقة تصفية الخثرة علي جودة الجبن القريش.

خلود إبراهيم بلايسي* ، مجدي محمد إسماعيل**
*** قسم الألبان – كلية الزراعة- جامعة قناة السويس.**
**** قسم تكنولوجيا الألبان- معهد بحوث الإنتاج الحيواني- مركز البحوث الزراعية – وزارة الزراعة.**

تم تصنيع الجبن القريش من لبن فرز بقري (٠,٤% دهن).حيث تم تعبئة الخثرة في الحصائر المستخدمة في الريف (المعاملة الأولي) أو في القوالب الخشبية (المعاملة الثانية) أو في أكياس من القماش (المعاملة الثالثة) و بعد ٢٤ ساعة تم تقطيع الجبن القريش الناتج و وزنة ثم قسمت كل معاملة إلى جزئين. الجزء الأول تم وضعة في عبوات بلاستيك بدون أضافه شرش في حين تم تخزين الجزء الثاني في الشرش الناتج من كل معاملة.و قد تم تخزين كل المعاملات في الثلاجة (٦±١°م) لمدة ٢٨ يوم حيث أجريت التحليلات الكيماوية والميكروبية و الحسية أسبوعيا.

و تشير النتائج إلى زيادة نسبة التصافي بالمعاملة الثالثة عن المعاملة الأولي و الثانية. في حين انخفضت نسب الحموضة و المادة الصلبة و الدهن و الدهن/المادة الجافة والملح و الرماد والنتروجين الكلي و النتروجين الكلي/المادة الجافة في المعاملة الأولي بالمقارنة بالمعاملة الثانية و الثالثة.وجد أيضا أن نسبة النتروجين الذائب و النتروجين الذائب/النتروجين الكلي و النتروجين الغير بروتيني/النتروجين الكلي كانت مرتفعة بالمعاملة الثانية عن المعاملة الأولي و الثالثة.و قد أظهر التحليل الميكروبي للجبن زيادة أعداد المجموعات البكتيرية و البكتريا المحللة للبروتين و الفطريات و الخمائر بجبن المعاملة الأولي. وقد سجلت جبن المعاملة الأولي و الثانية أعلي درجات للتحكيم الحسي عندما كانت طازجة و حتى ٧ أيام من التخزين.

لوحظ أيضا أن قيم الحموضة و المادة الصلبة و الدهن و الدهن/المادة الجافة و النتروجين الكلي و النتروجين الغير بروتيني و أعداد المجموعات البكتيرية و البكتيريا المحللة للبروتين و الفطريات والخمائر و درجات التحكيم الحسي كانت منخفضة بالجبن القريش المخزن في الشرش بالمقارنة بالجبن المخزن بدون شرش. في حين زادت نسبة الملح والرماد و النتروجين الذائب/النتروجين الكلي بالجبن القريش المخزن في الشرش. وكانت نسبة الحموضة مرتفعة بشرش المعاملة الثانية في حين زادت نسبة المادة الصلبة و النتروجين الكلي بشرش المعاملة الثالثة و لم توجد إختلافات واضحة في نسب الملح بين شرش المعاملات الثلاثة. هذا و يمكن القول أنة يمكن استخدام الأكياس القماش في صناعة جبن قريش ذو جودة عالية.