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Introduction

The production of sheep milk is variable during the year according to the seasonality of lambing. In Italy, one of the more popular technique to reduce cost during low production period, it's stored milk for a few days before cheese making. Storage time and conservation techniques can affect the quality of milk and cheese.



Objective

The aim of this study was to evaluate how long milk can be stored without compromising cheese quality



Methods

- Milk samples from 3 Massese sheep herds (A, B, C) homogeneous for number of subject and farming system, were collected and stored at constant temperature +4°C.

- Sub-samples of milk (A,B,C) were analyzed at 0-24-48-72-96h to evaluate physical-chemical composition, cheese-making ability and hygienic-sanitary milk parameters. (A0,A24...A96; B0,B24...B96; C0,C24...C96).

- Data were tested statistically by ANOVA and the differences between means assessed with t-Student test.

Results

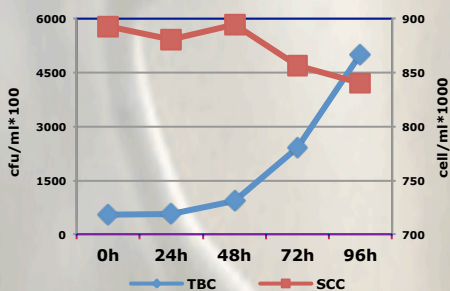
Average data of physical-chemical, technological and hygienic-sanitary milk parameters

Chemical composition of milk A-B-C from 3 herds

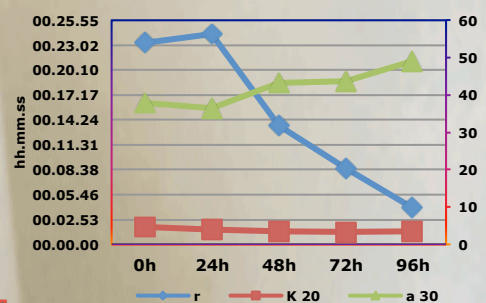
	A	B	C
Dry matter %	19,13	18,98	16,92
Fat %	8,08	7,84	6,21
Protein %	6,61	7,32	5,81
Casein %	5,45	5,98	4,47
Lactose %	4,52	4,175	4,65
Ash %	0,92	0,93	0,93

	0h	24h	48h	72h	96h	SE
pH	6.74a	6.77a	6.75a	6.44b	5.86c	0,072
Titrate acidity °SH	10.73a	11.67ab	11.33ab	14.20b	21.67c	1,052
Free acidity	3.00a	3.33a	4.00a	4.44ab	6.44b	0,646
Protein %	6,58	6,48	6,53	6,43	6,28	0,481
Fat %	7,38	7,37	7,38	7,32	7,29	0,588
Casein %	5,30	5,20	5,39	4,91	5,12	0,405
Lactose %	4,45	4,45	4,45	4,46	4,45	0,142
TBC (Total Bacterial Count) [cfu/ml]*1000	548.00a	577.00a	925.33ab	2416.67b	5016.67c	535,642
SCC (Somatic Cell Count) [cell/ml]*1000	892,66	881,17	894,17	856,5	840,33	384,271
r hh.mm.ss	00:23:18a	00:24:22a	00:13:45b	00:08:45bc	00:04:12c	0,004
K₂₀ hh.mm.ss	00:02:04a	00:01:45b	00:01:32bc	00:01:27c	00:01:30c	0,001
a₃₀ mm	37,88	36,47	43,17	43,68	48,97	4,76

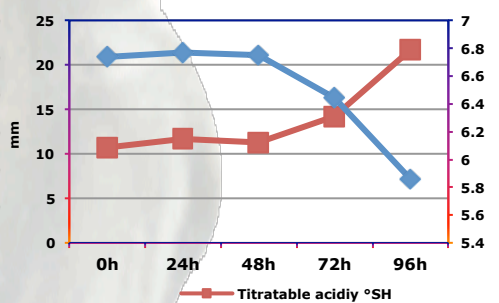
Average performance of TBC and SCC



Average performance of technological milk parameters



Average performance of °SH and pH



Discussion and Conclusions

- Storage time did not show significant changes on physical and chemical characteristics of milk.
- TBC was constant for 48 hours and then increased significantly, resulting in an increase in titratable and free acidity and in a reduction in pH. The slight decrease of SCC depends on lysis of cell membranes
- Milk acidification caused an increase in the reactivity of the rennet with a concomitant reduction in clotting time (r, k₂₀). This factor seems positive but is the result of a pathological acidification of milk.
- Milk storage at constant temperature preserved its technological and cheese-making characteristics up to 48 hours. After 48h the microbial and enzymatic activity affected milk quality and therefore cheese-making