

SUPPLEMENTARY FILES

Impact of freezing on the microbiological quality and physical characteristics of buffalo mozzarella cheese.

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Table S1. Microbiological data of thermised buffalo milk collected from different dairies. Each data represents the mean \pm SD of the different microbiological analyses, each performed in triplicate.

A) Total bacterial count

Time (days)	Dairy X	Dairy Y	Dairy Z
0	6.505 \pm 0.0010	7.322 \pm 0.0021	6.447 \pm 0.0012
60	6.301 \pm 0.0020	6.301 \pm 0.0020	6.041 \pm 0.0019
150	7.431 \pm 0.0018	5.255 \pm 0.0012	6.792 \pm 0.0018
240	6.707 \pm 0.0010	5.732 \pm 0.0010	5.880 \pm 0.0020
330	6.740 \pm 0.0017	5.079 \pm 0.0021	6.505 \pm 0.0011

B) Coliforms

Time (days)	Dairy X	Dairy Y	Dairy Z
0	4.806 \pm 0.0010	6.176 \pm 0.0011	4.568 \pm 0.0008
60	3.041 \pm 0.0018	4 \pm 0.0020	3.278 \pm 0.0011
150	4.397 \pm 0.0012	3.462 \pm 0.0016	2.724 \pm 0.0015
240	2.886 \pm 0.0011	3.342 \pm 0.0018	2.863 \pm 0.0017
330	2.845 \pm 0.0010	2.380 \pm 0.0022	2.838 \pm 0.0010

C) *Escherichia coli*

Time (days)	Dairy X	Dairy Y	Dairy Z
0	3.806 \pm 0.0012	2.602 \pm 0.0018	2.662 \pm 0.0018
60	3.176 \pm 0.0013	2.556 \pm 0.0013	2.602 \pm 0.0017
150	2.845 \pm 0.0015	0.954 \pm 0.0017	1.579 \pm 0.0009
240	1.908 \pm 0.0011	1.491 \pm 0.0020	1.568 \pm 0.0010
330	0.903 \pm 0.0017	0.845 \pm 0.0014	0.954 \pm 0.0015

D) *Enterobacteriaceae*

Time (days)	Dairy X	Dairy Y	Dairy Z
0	4.653 \pm 0.0016	6.113 \pm 0.0018	4.778 \pm 0.0011
60	3.176 \pm 0.0009	4.342 \pm 0.0017	2.869 \pm 0.0002
150	4.255 \pm 0.0012	3.176 \pm 0.0007	3.041 \pm 0.0018
240	2.799 \pm 0.0008	3.431 \pm 0.0015	3 \pm 0.0019
330	3.041 \pm 0.0019	2.255 \pm 0.0011	2.954 \pm 0.0011

E) Lactic acid bacteria

Time (days)	Dairy X	Dairy Y	Dairy Z
0	5.568 \pm 0.0010	6.342 \pm 0.0015	3.278 \pm 0.0009
60	5.146 \pm 0.0015	5.863 \pm 0.0017	5.518 \pm 0.0010
150	5.322 \pm 0.0018	4.672 \pm 0.0012	6.079 \pm 0.0011
240	5.361 \pm 0.0017	5.041 \pm 0.0022	5.672 \pm 0.0018
330	5.591 \pm 0.0020	4.672 \pm 0.0018	5.342 \pm 0.0019

F) Coagulase-positive staphylococci

Time (days)	Dairy X	Dairy Y	Dairy Z
0	0.903 ± 0.0015	0.954 ± 0.0008	2.556 ± 0.0015
60	0.698 ± 0.0008	2.204 ± 0.0015	1.863 ± 0.0021
150	2.204 ± 0.0016	1.740 ± 0.0018	1.591 ± 0.0017
240	0.698 ± 0.0009	1.740 ± 0.0019	1.579 ± 0.0004
330	0.477 ± 0.0010	2.913 ± 0.0017	1.568 ± 0.0009

G) *Pseudomonas* spp.

Time (days)	Dairy X	Dairy Y	Dairy Z
0	1.954 ± 0.0015	1.991 ± 0.0020	7.204 ± 0.0015
60	5.342 ± 0.0018	4.113 ± 0.0018	5.880 ± 0.0020
150	5.568 ± 0.0010	4.146 ± 0.0010	6.079 ± 0.0008
240	1.954 ± 0.0016	4.518 ± 0.0009	5.431 ± 0.0010
330	3.633 ± 0.0019	3.819 ± 0.0010	5.602 ± 0.0011

H) Psychrotrophic

Time (days)	Dairy X	Dairy Y	Dairy Z
0	6 ± 0.0018	6.477 ± 0.0012	7.113 ± 0.0022
60	5.982 ± 0.0019	5.204 ± 0.0013	6.079 ± 0.0010
150	6.041 ± 0.0020	4.832 ± 0.0018	6.707 ± 0.0008
240	6.079 ± 0.0010	5.342 ± 0.0016	6.041 ± 0.0016
330	6.146 ± 0.0012	4.851 ± 0.0020	5.732 ± 0.0018

I) Yeasts

Time (days)	Dairy X	Dairy Y	Dairy Z
0	3.278 ± 0.0008	0.954 ± 0.0016	3.255 ± 0.0015
60	3.477 ± 0.0010	2.599 ± 0.0010	2.799 ± 0.0009
150	3.255 ± 0.0012	2.598 ± 0.0011	3.041 ± 0.0020
240	2.591 ± 0.0020	3 ± 0.0020	3.204 ± 0.0017
330	2.662 ± 0.0018	2.596 ± 0.0007	3.732 ± 0.0018

J) Moulds

Time (days)	Dairy X	Dairy Y	Dairy Z
0	4.041 ± 0.0018	0.954 ± 0.0017	1.995 ± 0.0011
60	1.986 ± 0.0008	1.995 ± 0.0019	2.592 ± 0.0020
150	2.592 ± 0.0016	1.986 ± 0.0012	2.591 ± 0.0022
240	1.991 ± 0.0019	1.991 ± 0.0020	1.986 ± 0.0013
330	1.982 ± 0.0018	2.596 ± 0.0012	1.977 ± 0.0010

Table S2. Microbiological data of pre-mature curd collected from different dairies. Each data represents the mean \pm SD of the different microbiological analyses, each performed in triplicate.

A) Total bacterial count

Time (days)	Dairy X	Dairy Y	Dairy Z
0	6.146 \pm 0.0010	5.579 \pm 0.0012	8.477 \pm 0.0012
60	5.591 \pm 0.0020	5.380 \pm 0.0018	5.176 \pm 0.0011
150	6 \pm 0.0020	5.079 \pm 0.0010	4.838 \pm 0.0009
240	4.880 \pm 0.0022	4.662 \pm 0.0017	6.602 \pm 0.0014
330	5.568 \pm 0.0011	4.653 \pm 0.0015	6.973 \pm 0.0016

B) Coliforms

Time (days)	Dairy X	Dairy Y	Dairy Z
0	4.908 \pm 0.0010	4.113 \pm 0.0018	5.079 \pm 0.0011
60	3.041 \pm 0.0018	4.041 \pm 0.0019	1.591 \pm 0.0022
150	3.301 \pm 0.0020	3.462 \pm 0.0021	4.146 \pm 0.0012
240	0.845 \pm 0.0012	2.929 \pm 0.0010	3.755 \pm 0.0011
330	2 \pm 0.0022	3.301 \pm 0.0017	2.556 \pm 0.0010

C) *Escherichia coli*

Time (days)	Dairy X	Dairy Y	Dairy Z
0	4.204 \pm 0.0016	2.892 \pm 0.0018	3.146 \pm 0.0014
60	0.845 \pm 0.0014	3.041 \pm 0.0020	0.954 \pm 0.0016
150	2.690 \pm 0.0020	1.591 \pm 0.0019	2.857 \pm 0.0013
240	1.913 \pm 0.0012	1.740 \pm 0.0021	2.380 \pm 0.0018
330	0.477 \pm 0.0010	0.954 \pm 0.0016	0.903 \pm 0.0017

D) *Enterobacteriaceae*

Time (days)	Dairy X	Dairy Y	Dairy Z
0	4.826 \pm 0.0011	4.880 \pm 0.0019	5.079 \pm 0.0010
60	2 \pm 0.0023	4.146 \pm 0.0011	2.041 \pm 0.0018
150	2.863 \pm 0.0015	3.477 \pm 0.0010	4.176 \pm 0.0015
240	0.903 \pm 0.0018	2.908 \pm 0.0002	3.176 \pm 0.0014
330	2.204 \pm 0.0018	3.301 \pm 0.0019	2.740 \pm 0.0011

E) Lactic acid bacteria

Time (days)	Dairy X	Dairy Y	Dairy Z
0	6.255 \pm 0.0015	6.602 \pm 0.0019	7.518 \pm 0.0009
60	5.963 \pm 0.0018	5.954 \pm 0.0016	4.591 \pm 0.0019
150	5.732 \pm 0.0019	5.204 \pm 0.0017	4.812 \pm 0.0020
240	5.612 \pm 0.0020	4.913 \pm 0.0019	5.322 \pm 0.0018
330	4.954 \pm 0.0016	5.380 \pm 0.0021	4.954 \pm 0.0017

F) Coagulase-positive staphylococci

Time (days)	Dairy X	Dairy Y	Dairy Z
0	0.845 ± 0.0013	0.903 ± 0.0016	2.204 ± 0.0015
60	0.903 ± 0.0018	1.544 ± 0.0015	1.806 ± 0.0011
150	1.653 ± 0.0019	0.845 ± 0.0011	1.653 ± 0.0016
240	0.778 ± 0.0019	1.556 ± 0.0009	1.591 ± 0.0018
330	0.698 ± 0.0011	0.698 ± 0.0007	1.579 ± 0.0010

G) *Pseudomonas* spp.

Time (days)	Dairy X	Dairy Y	Dairy Z
0	1.977 ± 0.0010	1.991 ± 0.0018	4.041 ± 0.0019
60	1.982 ± 0.0018	2.146 ± 0.0015	3.041 ± 0.0023
150	1.986 ± 0.0011	3.612 ± 0.0020	3.342 ± 0.0020
240	1.991 ± 0.0019	3.556 ± 0.0015	3.939 ± 0.0010
330	2.204 ± 0.0015	3.785 ± 0.0017	3.113 ± 0.0017

H) Psychrotrophic

Time (days)	Dairy X	Dairy Y	Dairy Z
0	5.079 ± 0.0010	5.491 ± 0.0017	4.857 ± 0.0009
60	4.079 ± 0.0010	2.832 ± 0.0019	4.556 ± 0.0010
150	4.230 ± 0.0019	2.599 ± 0.0009	4.361 ± 0.0019
240	3.740 ± 0.0020	4.462 ± 0.0013	5.230 ± 0.0020
330	5.041 ± 0.0022	1.995 ± 0.0008	5.176 ± 0.0016

I) Yeasts

Time (days)	Dairy X	Dairy Y	Dairy Z
0	5.113 ± 0.0016	2.491 ± 0.0020	3.579 ± 0.0010
60	5.146 ± 0.0012	2.544 ± 0.0017	2.799 ± 0.0010
150	5.477 ± 0.0010	2.542 ± 0.0019	2.806 ± 0.0012
240	3.968 ± 0.0009	2.525 ± 0.0012	2.591 ± 0.0022
330	3.949 ± 0.0007	2.505 ± 0.0015	2.653 ± 0.0020

J) Moulds

Time (days)	Dairy X	Dairy Y	Dairy Z
0	3 ± 0.0025	1.556 ± 0.0015	1.995 ± 0.0012
60	1.991 ± 0.0019	1.963 ± 0.0017	1.991 ± 0.0017
150	1.977 ± 0.0015	1.959 ± 0.0012	2.690 ± 0.0021
240	2.597 ± 0.0011	1.954 ± 0.0016	2.681 ± 0.0020
330	1.991 ± 0.0020	1.929 ± 0.0010	1.977 ± 0.0012