

SUPPLEMENTARY DATA

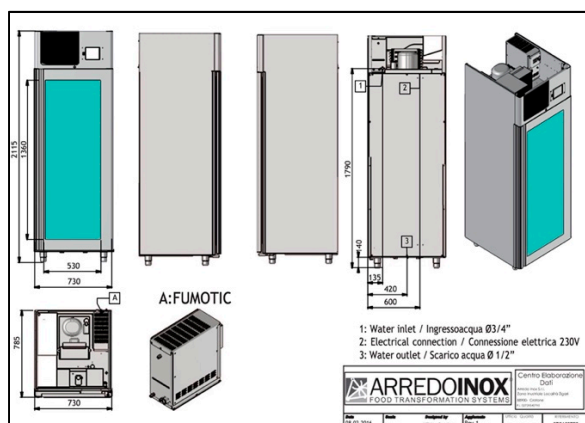


Figure S1. Industrial ripening plant used to ripen cheeses. All dimensions are in mm.

Table S1. Diets composition (kg) of buffaloes fed with (FRS) or without (CTL) green feed inclusion.

| Feed (Kg) | Diet | |
|-------------------|-------|-------|
| | CTL | FRS |
| Concentrate | 5.50 | 2.50 |
| Alfalfa | 4.50 | 2.60 |
| Straw | 1.20 | 1.20 |
| Silomais | 23.00 | 18.00 |
| Green ryegrass | - | 25.00 |
| Hydrogenated fats | - | 0.30 |
| Calcium carbonate | - | 0.05 |
| TOTAL | 34.20 | 49.65 |

Table S2. Chemical composition of buffalo milks used to produce the cheeses

| Item | | Raw milk (L) | |
|----------------|-----|------------------------|------------------------|
| | | Semi-hard cheese | Dry ricotta cheese |
| Fat, | CTL | 7.20±0.23 ^x | 7.80±0.17 ^x |
| % | FRS | 9.10±0.12 ^y | 8.60±0.17 ^y |
| Protein, | CTL | 4.70±0.06 | 4.90±0.06 |
| % | FRS | 4.40±0.12 | 4.60±0.12 |
| Solid not-fat, | CTL | 10.15±0.20 | 10.02±0.03 |
| % | FRS | 9.97±0.11 | 10.00±0.07 |
| Lactose, | CTL | 4.76±0.05 | 4.64±0.17 |
| % | FRS | 4.73±0.02 | 4.60±0.20 |

FRS, group of buffaloes fed with green forage; CTL, group of buffaloes fed without green forage. Statistical analysis was performed comparing experimental groups. All data were presented as mean (m) ± standard error (se). Different superscript uppercase letters indicate a significant difference at $p < 0.01$. Different superscript lowercase letters indicate a significant difference at $p < 0.05$.

^{x-y} Mean values in the same column with different letters presented significant differences.

Table S3. Effects of feeding system and ripening time on SCFA, MCFA, LCFA; SFA, MUFA and PUFA composition; n-3, n-6 CLAs composition in semi-hard cheeses

| Item | | Raw material | Semi-finished products | | Ripened cheeses | |
|---------|-----|---------------------------|---------------------------|--------------------------|----------------------------|---------------------------|
| | | L | C | T0 | MI | MT |
| SCFA | CTL | 7.05±0.70 ^{x,A} | 11.14±0.37 ^{x,B} | 9.81±0.23 ^C | 8.06±0.13 ^{x,AA} | 7.54±0.14 ^{ba} |
| | FRS | 8.95±0.15 ^{y,AA} | 9.59±0.23 ^{y,BA} | 10.09±0.22 ^C | 6.46±0.06 ^{Y,D} | 7.87±0.14 ^E |
| MCFA | CTL | 59.46±1.14 ^a | 57.39±1.89 | 56.93±1.30 | 56.19±0.93 ^{x,b} | 55.72±1.05 ^{x,b} |
| | FRS | 60.03±1.11 ^{aA} | 56.6±1.34 ^A | 56.35±1.29 ^{ba} | 47.15±0.78 ^{Y,B} | 48.61±0.84 ^{Y,B} |
| LCFA | CTL | 34.30±0.64 ^{aA} | 32.69±1.07 ^{aA} | 34.04±0.78 ^{aA} | 36.20±0.60 ^{x,b} | 37.04±0.70 ^{x,B} |
| | FRS | 32.76±0.69 ^A | 34.47±0.82 ^A | 34.24±0.78 ^A | 44.81±0.74 ^{Y,B} | 43.60±0.76 ^{Y,B} |
| SFA | CTL | 73.58±1.32 ^a | 72.88±2.40 | 71.55±1.64 | 70.26±1.16 ^x | 69.20±1.30 ^b |
| | FRS | 74.40±1.46 ^A | 72.45±1.71 ^{aA} | 72.52±1.66 ^{aA} | 65.50±1.09 ^{Y,B} | 67.93±1.18 ^{ba} |
| MUFA | CTL | 26.11±0.50 | 24.31±0.80 ^{aA} | 25.48±0.58 ^{ab} | 26.65±0.44 ^{x,bc} | 27.60±0.52 ^{cb} |
| | FRS | 24.71±0.56 ^A | 25.00±0.59 ^A | 25.06±0.57 ^A | 30.50±0.51 ^{Y,aB} | 28.64±0.50 ^{ba} |
| PUFA | CTL | 2.69±0.08 ^{aA} | 3.11±0.10 ^{x,B} | 2.99±0.07 ^{x,b} | 3.10±0.05 ^{x,B} | 3.24±0.06 ^{x,aB} |
| | FRS | 2.84±0.06 ^A | 2.56±0.06 ^{Y,B} | 2.43±0.06 ^{Y,b} | 4.01±0.07 ^{Y,aC} | 3.81±0.07 ^{Y,bC} |
| CLA | CTL | 0.69±0.02 ^{x,A} | 0.58±0.02 ^B | 0.58±0.01 ^B | 0.59±0.01 ^{x,B} | 0.58±0.01 ^{x,B} |
| | FRS | 0.48±0.01 ^{Y,A} | 0.57±0.01 ^B | 0.58±0.01 ^B | 0.72±0.01 ^{Y,C} | 0.72±0.01 ^{Y,C} |
| n-3 | CTL | 0.31±0.01 ^{x,A} | 0.31±0.01 ^{x,A} | 0.31±0.01 ^A | 0.31±0.01 ^{x,A} | 0.36±0.01 ^{x,B} |
| | FRS | 0.43±0.01 ^{Y,A} | 0.39±0.01 ^{Y,B} | 0.31±0.01 ^C | 0.51±0.01 ^{Y,D} | 0.61±0.01 ^{Y,E} |
| n-6 | CTL | 1.74±0.03 ^{x,A} | 2.02±0.07 ^{x,B} | 1.99±0.05 ^{x,B} | 2.01±0.03 ^B | 1.81±0.03 ^x |
| | FRS | 1.93±0.04 ^Y | 1.59±0.04 ^Y | 1.43±0.03 ^Y | 2.11±0.04 | 2.01±0.04 ^Y |
| n-6/n-3 | CTL | 5.69±0.14 ^{x,A} | 6.51±0.21 ^{x,B} | 6.49±0.15 ^{x,B} | 6.49±0.11 ^{x,B} | 5.08±0.10 ^{x,C} |
| | FRS | 4.47±0.05 ^{Y,A} | 4.05±0.10 ^{Y,B} | 4.63±0.11 ^{Y,A} | 4.16±0.07 ^{Y,B} | 3.27±0.06 ^{Y,C} |

FRS, group of buffaloes fed with green forage; CTL, group of buffaloes fed without green forage. L, raw buffalo milk; C, curd; T0, 1 d; MI, time of innovative method; MT, time of traditional method. SCFA, Short-chain fatty acids (C4 to C10); MCFA, Medium-Chain Fatty Acids (C12- C16); LCFA, Long-Chain Fatty Acids (C18:0 - C18:3); MUFA, monounsaturated fatty acids; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids. In each storage day, three samples by experimental group were analysed. Statistical analysis was performed comparing experimental groups at each sampling time and within each experimental group along the ripening period. All data were presented as mean (m) ± standard error (se). Different superscript uppercase letters indicate a significant difference at $p < 0.01$. Different superscript lowercase letters indicate a significant difference at $p < 0.05$.

^{a-d} Mean values in the same row (same batch in different weeks) with different letters presented significant differences.

^{x-y} Mean values in the same column (different samples on the same time/ripening time) with different letters presented significant differences.

Table S4. Effects of feeding system and ripening time on SCFA, MCFA, LCFA; SFA, MUFA and PUFA composition; n-3, n-6 CLAs composition in dry ricotta cheeses

| Item | | Raw material | Semi-finished product | Ripened cheeses | |
|---------|-----|----------------------------|----------------------------|----------------------------|----------------------------|
| | | L | T0 | MI | MT |
| SCFA | CTL | 9.55±0.40 ^{aA} | 11.45±0.37 ^{X,A} | 11.09±0.46 ^{X,B} | 12.46±0.51 ^B |
| | FRS | 9.00±0.33 ^A | 8.38±0.34 ^{Y,A} | 8.14±0.23 ^{Y,A} | 12.37±0.46 ^B |
| MCFA | CTL | 59.98±0.70 ^X | 58.64±0.67 ^X | 59.39±2.45 ^x | 57.22±2.36 |
| | FRS | 50.77±0.18 ^{Y,A} | 46.88±1.93 ^{Y,aA} | 52.46±0.03 ^{y,bB} | 55.71±0.13 ^C |
| LCFA | CTL | 30.53±0.62 ^X | 31.55±0.75 ^X | 30.98±1.28 ^X | 31.23±1.29 |
| | FRS | 39.10±0.59 ^{Y,bA} | 43.91±1.81 ^{Y,aA} | 39.79±0.16 ^{Y,bA} | 33.06±0.30 ^B |
| SFA | CTL | 74.79±0.74 ^X | 74.26±0.30 ^x | 74.99±3.09 | 72.90±3.00 |
| | FRS | 67.83±0.21 ^{Y,A} | 66.63±2.74 ^y | 68.59±0.82 ^A | 71.46±0.33 ^B |
| MUFA | CTL | 22.97±0.25 ^X | 23.20±0.12 ^X | 22.68±0.93 ^X | 24.17±1.00 |
| | FRS | 28.45±0.10 ^{Y,A} | 29.42±1.21 ^{Y,a} | 28.22±0.99 ^{Y,a} | 25.73±0.51 ^{bB} |
| PUFA | CTL | 2.40±0.51 | 2.54±0.27 ^X | 2.36±0.10 ^{X,A} | 2.96±0.12 ^{X,B} |
| | FRS | 3.60±0.37 ^{ab} | 3.76±0.15 ^{Y,aA} | 3.19±0.15 ^{Y,bA} | 2.60±0.03 ^{y,abB} |
| CLA | CTL | 0.46±0.01 ^{X,A} | 0.46±0.02 ^{X,A} | 0.44±0.02 ^{X,A} | 0.55±0.02 ^B |
| | FRS | 0.82±0.03 ^{Y,aA} | 0.95±0.04 ^{Y,bA} | 0.59±0.02 ^{Y,B} | 0.58±0.02 ^B |
| n-3 | CTL | 0.39±0.02 ^{X,A} | 0.30±0.01 ^B | 0.34±0.01 | 0.35±0.01 |
| | FRS | 0.50±0.03 ^{Y,A} | 0.32±0.01 ^B | 0.41±0.06 | 0.31±0.05 ^B |
| n-6 | CTL | 1.55±0.03 ^{X,A} | 1.78±0.05 ^{X,B} | 1.49±0.06 ^{X,A} | 1.98±0.08 ^{Y,B} |
| | FRS | 2.28±0.03 ^{Y,A} | 2.32±0.10 ^{Y,A} | 2.18±0.08 ^{Y,A} | 1.72±0.03 ^{Y,B} |
| n-6/n-3 | CTL | 4.01±0.26 ^A | 5.84±0.02 ^{X,B} | 4.33±0.18 ^{X,A} | 5.72±0.24 ^B |
| | FRS | 4.57±0.19 ^A | 7.31±0.30 ^{Y,B} | 5.31±0.14 ^{Y,C} | 5.61±0.16 ^B |

FRS, group of buffaloes fed with green forage; CTL, group of buffaloes fed without green forage. L, raw buffalo milk; C, curd; T0, 1 d; MI, time of innovative method; MT, time of traditional method. SCFA, Short-chain fatty acids (C4 to C10); MCFA, Medium-Chain Fatty Acids (C12- C16); LCFA, Long-Chain Fatty Acids (C18:0 - C18:3); MUFA, monounsaturated fatty acids; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids. In each storage day, three samples by experimental group were analysed. Statistical analysis was performed comparing experimental groups at each sampling time and within each experimental group along the ripening period. All data were presented as mean (m) ± standard error (se). Different superscript uppercase letters indicate a significant difference at $p < 0.01$. Different superscript lowercase letters indicate a significant difference at $p < 0.05$.

^{a-c} Mean values in the same row (same batch in different weeks) with different letters presented significant differences.

^{x-y} Mean values in the same column (different samples on the same time/ripening time) with different letters presented significant differences.