**Supplemental material**

**Supplemental Table 1** Single variate mixed-effect models of log-transformed milk iodine concentrations (MIC) as dependent variable and continuous or categorical predictors as independent variables, controlled by farm management as fixed effect and farm identification number as random effect in milk samples from 32 farms in Switzerland and Aosta valley1

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | n | β ± SE | *P value* |
| Farm characteristics |  |  |  |
| Region (all pairwise comp)  Midland – Jura  Alpine – Jura  Alpine – Midland | 126 | 0.081 ± 0.414  -0.312 ± 0.438  -0.393 ± 0.290 | 0.98  0.75  0.36 |
| Farm type (reference conventional) | 126 | -0.339 ± 0.282 | 0.24 |
| Production type  Milk from Alpine grazing  Industry milk  Cheese | 126  126  126 | -0.149 ± 0.229  0.363 ± 0.289  -0.207 ± 0.281 | 0.52  0.22  0.47 |
| Farm altitude [m above sea level] | 123 | -0.241 ± 0.137 | 0.090 |
| Farm size [ha] | 123 | 0.137 ± 0.134 | 0.32 |
| Log(Number of animals) [n] | 114 | 0.229 ± 0.116 | 0.051 |
| Herd’s average days in milk | 114 | -0.001 ± 0.074 | 0.99 |
| Daily milk yield [kg] | 114 | 0.191 ± 0.114 | 0.097 |
| Log(Primiparous cows) [%] | 111 | -0.018 ± 0.104 | 0.86 |
| Season (all pairwise comp)  Jun – Dec  Mar – Dec  Sep – Dec  Mar – Jun  Sep – Jun  Sep – Mar | 126 | -0.233 ± 0.164  -0.030 ± 0.162  -0.657 ± 0.164  0.203 ± 0.164  -0.424 ± 0.165  -0.627 ± 0.164 | 0.48  1.00  <0.001  0.60  0.051  <0.001 |
| Milk composition |  |  |  |
| Log(Fat content) [g/100g] | 114 | 0.221 ± 0.077 | 0.005 |
| Log(Protein content) [g/100g] | 114 | 0.033 ± 0.085 | 0.70 |
| Log(Cell count) [1000/mL] | 114 | -0.068 ± 0.077 | 0.38 |
| Teat dipping with iodine-containing disinfectants  Iodine concentration of disinfectant [mg/mL] | 123  111 | 0.868 ± 0.257  0.157 ± 0.130 | 0.002  0.24 |
| Iodine concentration in feed components [mg/kg DM]  Log(Forages/concentrate ingredients)  Log(Commercial concentrate)  Log(Mineral mixture)  Salt | 61  52  59  59 | 0.165 ± 0.137  -0.086 ± 0.146  -0.005 ± 0.176  -0.055 ± 0.139 | 0.24  0.56  0.98  0.70 |
| Iodine concentration in feed components in total diet [mg/kg DM diet]  Log(Forages/concentrate ingredients)  Commercial concentrates  Sqrt(Mineral mixture)  Salt  30 g salt scenario  50 g salt scenario  70 g salt scenario  Total feed  30 g salt scenario  50 g salt scenario  70 g salt scenario | 61  60  61  61  61  61  60  60  60 | 0.142 ± 0.136  0.085 ± 0.129  0.104 ± 0.157  0.024 ± 0.142  -0.025 ± 0.157  -0.084 ± 0.140  0.063 ± 0.143  0.062 ± 0.143  0.061 ± 0.144 | 0.31  0.51  0.51  0.87  0.87  0.55  0.66  0.67  0.68 |
| Daily iodine intake [mg/d]  Log(Forages/concentrate ingredients)  Log(Commercial concentrate)  Log(Mineral mixture)  Salt 50 g scenario  Total feed 50 g salt scenario | 61  52  59  59  52 | 0.099 ± 0.135  -0.032 ± 0.145  0.180 ± 0.172  -0.135 ± 0.145  0.173 ± 0.134 | 0.47  0.83  0.30  0.36  0.21 |

1 Significance level was set at *P*<0.05 and borderline significance level at *P*<0.1