Genetic polymorphisms at candidate genes affecting fat content and fatty acid composition in Modicana cows: effects on milk production traits in different feeding systems

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**Supplementary data**

**Supplementary Table S1** *Genes and polymorphisms analysed in 165 Modicana cows*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Gene | Chromosome | Region | Acc. Num. | Sequence  Polymorphism | Amino acid  Substitution | Ref. method |
| abcg2 | BTA6 | Exon 14 | AJ871176 | A/C | Y581S | Komisarek et al. (2009) |
| dgat1 | BTA14 | Exon 8 | AY065621 | AA/GC | K232A | Komisarek et al. (2011) |
| scd1 | BTA26 | Exon 5 | AY241932 | C/T | A293V | Komisarek et al. (2009) |

**Supplementary Table S2** *PCR-RFLP and aCRS PCR-RFLP conditions for the analysed polymorphisms at ABCG2, DGAT1 and SCD1 loci in 165 Modicana cows*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP\* | PRIMERS (5’-3’) | T. of  Annealing | PCR  PRODUCT  SIZE (bp) | RESTRICTION ENDONUCLEASE | DIGESTION  PRODUCT  SIZE (bp) |
| abcg2-y582s | F-AACAGCCTCAGCTCCAGAGAGATAT  R-CGGTGACAGATAAGGAGAACATACT\*\* | 58 °C | 292 | *PstI* | A (Y): 292  C (S): 268, 24 |
| dgat1-k232a | F-TGCCGCTTGCTCGTAGCTTTGCC  R-ACCTGGAGCTGGGTGAGGAACAGC | 58.5 °C | 378 | *BglI* | AA (K): 282, 96  GC (A): 245, 96, 28 |
| scd1-a293v | F-GCCCTGTGAGAGTGGAAAATCAGGT  R-TCTTGCTGTGGACTGCTGACTTACG\*\* | 60 °C | 333 | *HinPlI* | C (A): 306, 27  T (V): 333 |
| \*Single Nucleotide Polymorphism  \*\* An intentional mismatch incorporating the restriction site to a sequence | | | | | |

**Supplementary Table S3** *Chemical composition of feeds given to Modicana cows*

|  |  |  |
| --- | --- | --- |
|  | Hay\* | Concentrate\*\* |
| **Chemical composition** |  |  |
| DM % | 90,4 | 89.0 |
| Crude protein % DM | 15.7 | 18.1 |
| NDF % DM | 52.8 | 21.0 |
| ADF % DM | 35.2 | 12.8 |
| Lignin % DM | 7.0 | 4.0 |
| 1NE kcal/kg DM | 1 305 | 1 714 |
| **Fatty acids** (g/100g FA) |  |  |
| 14:0 | 0.82 | 0.16 |
| 16:0 | 22.6 | 15.0 |
| 18:0 | 5.09 | 3.11 |
| c9 18:1 | 6.67 | 22.6 |
| c9c12 18:2 | 19.2 | 51.7 |
| c9c12 c12 18:3 | 37.0 | 3.02 |
| \*Hay consisted of vetch and oat; \*\*Concentrate was given exclusively to the cows reared in the semi-intensive system  1Net energy for lactation (Conrad et al., 1984) | | |

**Supplementary Table S4** *Intra-assay coefficients of variation of individual fatty acid calculated by using a reference standard butter (CRM 164, Community Bureau of Reference, Brussels, Belgium) and individual cow milk samples*

|  |  |  |
| --- | --- | --- |
|  | Coefficient of variation | |
|  | Standard butter | Milk Samples |
| 4:0 | 2.16 | 2.86 |
| 6:0 | 1.65 | 2.36 |
| 8:0 | 1.63 | 2.22 |
| 10:0 | 0.85 | 2.09 |
| 12:0 | 0.89 | 1.82 |
| 12:1 | 1.52 | 1.62 |
| 14:0 | - | 1.64 |
| *iso*15:0 | - | 1.89 |
| *anteiso*15:0 | - | 1.49 |
| *c*9 14:1 | - | 1.76 |
| 15:0 | - | 1.94 |
| 16:0 | 1.81 | 1.56 |
| *iso*17:0 | - | 1.89 |
| *anteiso*17:0 | - | 1.81 |
| *c*9 16:1 | 1.38 | 2.05 |
| 17:0 | - | 1.53 |
| 18:0 | 2.38 | 1.63 |
| *t*11 18:1 | - | 1.63 |
| *c*9 18:1 | 2.21 | 1.56 |
| *c*9*c*12 18:2 | 1.11 | 2.77 |
| 20:0 | - | 1.13 |
| *c*9*c*12*c*15 18:3 | 1.46 | 1.46 |
| *c*9*t*11 18:2 | - | 1.93 |
| 20:4 | - | 2.38 |
| Missing values in the CRM column are due to the absence of the FA in the reference standard butter. | | |