Relationship between the fatty acid profile of hair and energy availability of lactating cows

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Supplementary File

Settings of gas chromatography

The carrier gas was hydrogen at split 1:20. Injector and detector temperatures were 260°C and 280°C, respectively. The oven temperature started at 150°C and was held for 5 min, followed by an increase of 2°C/min to 200°C, which was held for 10 minutes followed by an increase of 1.5°C/min to 225°C which was held for 35 minutes. The fatty acid profiling was done by using C19:0 as an internal standard.

Supplementary Table S1 *Composition of the total mixed ration*

	g · kg^{-1} dry matter
Ingredient	
Corn silage	412
Grass silage	124
Lucerne silage	99
Straw	13
Dried sugar beet pulp	14
Pressed sugar beet pulp	191
Rape-cake meal	18
Soybean meal	9
Mixed feed[1]	114
Mineral feed[2]	2
Fat[3]	6
Chemical composition	
Crude protein	155
Crude fat	41
ADF	168
NDF	290
NE_L, MJ kg^{-1} dry matter	7.2

[1] Mixed feed contains 36% corn, 30% rye, 30% barley, 2% glycerin, 2% sugar beet molasses (Raiffeisen Osterburg-Lüchow-Dannenberg eG, Osterburg, Germany)
[2] Blattimin® M18 ADE, 4% Phosphorus (Höveler Spezialfutterwerke GmbH & Co. KG, Dormagen, Germany)
[3] Blattin® Lacto Fett, calcium-saponified palm oil fatty acids (Höveler Spezialfutterwerke GmbH & Co. KG, Dormagen, Germany)

Supplementary Table S2 *Total fat content (%) and relative fatty acid composition (%) in hair lipids of cows*

Week	6		8		all	
n	10		11		21	
	mean	s.d.	mean	s.d.	mean	s.d.
Total fat content of hair (%)	1.16	0.25	1.31	0.34	1.24	0.30
Fatty acid profile, % of total fatty acids						
C10:0	5.38	4.41	3.47	2.95	4,38	3,75
C11:0	0.15	0.05	0.14	0.07	0,14	0,06
C12:0	3.99	1.43	3.66	1.18	3,82	1,28
C13:0	0.33	0.09	0.30	0.08	0,32	0,09
C14:0	26.97	9.04	22.03	7.36	24,38	8,38
C14:1	0.20	0.14	0.14	0.06	0,17	0,11
C15:0	1.12	0.25	1.07	0.34	1,09	0,30
C15:1	0.05	0.02	0.09	0.06	0,07	0,05
C16:0	19.45	4.62	20.59	2.77	20,05	3,71
C16:1	2.01	0.78	1.91	0.74	1,96	0,74
C17:0	0.71	0.17	0.74	0.21	0,73	0,19
C17:1	0.13	0.08	0.18	0.09	0,16	0,09
C18:0	10.45	2.98	12.89	4.31	11,72	3,85
C18:1*trans*-11	0.35	0.20	0.40	0.18	0,38	0,19
C18:1*cis*-9	8.25	4.60	11.34	6.33	9,87	5,66
C18:1*cis*-11	1.84	0.60	2.07	0.40	1,96	0,51
C18:2*trans*	0.09	0.05	0.09	0.04	0,09	0,05
C18:2*n*-6	4.17	1.81	5.27	3.34	4,75	2,71
C18:3*n*-3	0.58	0.21	0.90	0.77	0,75	0,58
C20:0	2.08	0.38	1.95	0.48	2,01	0,43
C20:1	0.26	0.10	0.32	0.18	0,29	0,15
C20:3	0.16	0.13	0.40	0.65	0,29	0,49
C20:4*n*-6	0.25	0.20	0.22	0.09	0,23	0,15
C21:0	0.28	0.07	0.23	0.11	0,25	0,09
C22:0	3.64	1.25	3.30	1.19	3,46	1,20
C22:4	0.13	0.04	0.12	0.06	0,13	0,05
C22:5*n*-3	0.52	0.89	0.15	0.36	0,32	0,68
C22:6*n*-3	0.02	0.02	0.02	0.01	0,02	0,01
C23:0	0.89	0.95	0.82	0.47	0,85	0,72
C24:0	5.20	2.44	4.84	1.78	5,01	2,08
C18:1*trans* isomers	0.70	0.31	0.74	0.29	0,72	0,29
SFA	80.63	6.24	76.02	9.19	78,21	8,08
PUFA	5.93	2.48	7.18	3.91	15,20	5,94
MUFA	13.44	5.56	16.80	6.08	6,59	3,29
Sum of *n*-3 fatty acids	1.12	0.97	1.07	0.82	1,10	0,87
Sum of *n*-6 fatty acids	4.71	1.81	6.02	3.20	5,40	2,65
n-6/ *n*-3 ratio	6.17	2.75	6.72	2.03	6,46	2,35

C18:1*trans* isomers = sum of C18:1*trans*-6-8 + C18:1*trans*-9 + C18:1*trans*-10 + C18:1*trans*-11 + C18:1*trans*-12
SFA= sum of C12:0 + C14:0 + C16:0 + C17:0 + C18:0 + C20:0 + C21:0 + C22:0 + C24:0
PUFA = sum of *n*-3 and *n*-6 fatty acids + CLA*cis*-9.*trans*-11
MUFA = sum of C14:1 + C16:1 + C17:1 + C18:1*trans*-11 + C18:1*cis*-9 + C18:1*cis*-11 + C20:1 + C22:1 + C24:1
Sum of *n*-3 fatty acids = sum of C20:3*n*-3 + C22:6*n*-3 + C22:5*n*-3 + C20:5*n*-3 + C18:4*n*-3 + C18:3*n*-3
Sum of *n*-6 fatty acids = sum of C22:2*n*-6 + C20:2*n*-6 + C18:3*n*-6 + C22:4*n*-6 + C20:3*n*-6 + C18:2*n*-6 + C20:4*n*-6
n-6/ *n*-3 ratio = quotient of the sums of *n*-6 and *n*-3 fatty acids