

# Effect of inclusion of bakery by-products in the dairy cow's diet on milk fatty acid composition

Ratchaneewan Khiaosa-ard, Anna Kaltenegger, Elke Humer and Qendrim Zebeli

## SUPPLEMENTARY FILE

**Supplementary Table 1** Fatty acid composition in milk fat (% of total fatty acids) from cows fed diets without (CON, 8 cows) or with 15% or 30% bakery by-products (BP, 8 cows per each BP diet). The feeding phase consisted of baseline, when all cows received the same diet as CON, and week 2, 3 and 4 of the respective test diet.

Item	CON				15%BP				30%BP				SEM
	Baseline	Week2	Week3	Week4	Baseline	Week2	Week3	Week4	Baseline	Week2	Week3	Week4	
15:0	2.37	2.29	2.21	2.37	2.42 <sup>a</sup>	1.67 <sup>b</sup>	1.74 <sup>b</sup>	1.68 <sup>b</sup>	2.50 <sup>a</sup>	1.31 <sup>b</sup>	1.48 <sup>b</sup>	1.34 <sup>b</sup>	0.17
16:0	31.29	31.86	31.77	31.71	32.61 <sup>a</sup>	29.59 <sup>b</sup>	29.85 <sup>b</sup>	29.46 <sup>b</sup>	33.59 <sup>a</sup>	28.31 <sup>b</sup>	28.01 <sup>b</sup>	27.74 <sup>b</sup>	0.76
16:1 n7	1.82 <sup>xy</sup>	2.24 <sup>x</sup>	1.75 <sup>y</sup>	1.78 <sup>xy</sup>	1.91	1.47	1.49	1.42	2.05 <sup>x</sup>	1.50 <sup>y</sup>	1.55 <sup>xy</sup>	1.48 <sup>y</sup>	0.13
17:0	0.63	0.60	0.60	0.67	0.64 <sup>a</sup>	0.52 <sup>b</sup>	0.54 <sup>ab</sup>	0.48 <sup>b</sup>	0.67 <sup>a</sup>	0.43 <sup>b</sup>	0.47 <sup>b</sup>	0.43 <sup>b</sup>	0.03
18:0	4.97	5.06	5.15	5.17	4.92 <sup>b</sup>	6.60 <sup>a</sup>	6.43 <sup>a</sup>	6.78 <sup>a</sup>	5.21 <sup>b</sup>	7.35 <sup>a</sup>	7.08 <sup>a</sup>	7.38 <sup>a</sup>	0.30
18:1 n9 <sup>a</sup>	14.18	14.07	14.20	14.51	14.62 <sup>b</sup>	16.42 <sup>a</sup>	16.15 <sup>ab</sup>	16.53 <sup>a</sup>	14.63 <sup>b</sup>	18.07 <sup>a</sup>	18.43 <sup>a</sup>	18.56 <sup>a</sup>	0.51
18:1 other	0.49	0.49	0.42	0.46	0.50 <sup>b</sup>	0.74 <sup>a</sup>	0.75 <sup>a</sup>	0.74 <sup>a</sup>	0.46 <sup>b</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	0.16
<i>trans</i>													
18:1 total	1.23	1.74	1.13	1.10	1.26	1.79	1.71	1.72	1.13 <sup>b</sup>	2.50 <sup>a</sup>	2.46 <sup>a</sup>	2.50 <sup>a</sup>	0.16
<i>trans</i>													
∑18:1	16.71	17.13	16.53	16.90	17.25 <sup>b</sup>	19.46 <sup>a</sup>	19.01 <sup>ab</sup>	19.38 <sup>a</sup>	17.08 <sup>b</sup>	21.71 <sup>a</sup>	22.01 <sup>a</sup>	22.17 <sup>a</sup>	0.16
CLA <sup>b</sup>	0.30	0.37	0.36	0.33	0.35	0.42	0.40	0.42	0.37 <sup>b</sup>	0.58 <sup>a</sup>	0.62 <sup>a</sup>	0.59 <sup>a</sup>	0.02
C18:2 n6	1.59	1.49	1.50	1.49	1.46	1.42	1.39	1.41	1.36 <sup>b</sup>	1.54 <sup>ab</sup>	1.64 <sup>a</sup>	1.62 <sup>a</sup>	0.11
Other long-chain fatty acids	1.37	1.40	1.28	1.33	1.34	1.32	1.30	1.35	1.28 <sup>b</sup>	1.50 <sup>a</sup>	1.51 <sup>a</sup>	1.49 <sup>a</sup>	0.05
OBCFA <sup>c</sup>	5.39	5.42	5.50	5.64	5.43 <sup>a</sup>	4.59 <sup>b</sup>	4.75 <sup>b</sup>	4.66 <sup>b</sup>	5.48 <sup>a</sup>	4.03 <sup>b</sup>	4.31 <sup>b</sup>	4.06 <sup>b</sup>	0.17
SFA <sup>d</sup>	74.39	73.17	74.48	74.15	73.72	72.08	72.49	72.09	74.33 <sup>a</sup>	69.71 <sup>b</sup>	69.13 <sup>b</sup>	69.20 <sup>b</sup>	0.72
MUFA <sup>d</sup>	20.11	21.15	19.80	20.23	20.90	22.42	22.01	22.30	20.56 <sup>b</sup>	24.39 <sup>a</sup>	24.78 <sup>a</sup>	24.86 <sup>a</sup>	0.62
PUFA <sup>d</sup>	2.94	2.96	2.85	2.84	2.83	2.92	2.86	2.93	2.62 <sup>b</sup>	3.39 <sup>a</sup>	3.50 <sup>a</sup>	3.44 <sup>a</sup>	0.18
Indices <sup>e</sup>													
TI	4.28	4.21	4.43	4.31	4.27	3.92	4.02	3.95	4.45 <sup>a</sup>	3.53 <sup>b</sup>	3.42 <sup>b</sup>	3.44 <sup>b</sup>	0.12
AI	4.52	4.34	4.62	4.50	4.35	3.97	4.09	3.99	4.42 <sup>a</sup>	3.47 <sup>b</sup>	3.37 <sup>b</sup>	3.38 <sup>b</sup>	0.14
Hh	2.93	2.97	2.97	2.90	2.94 <sup>a</sup>	2.48 <sup>b</sup>	2.55 <sup>b</sup>	2.46 <sup>b</sup>	2.99 <sup>a</sup>	2.17 <sup>b</sup>	2.10 <sup>b</sup>	2.07 <sup>b</sup>	0.10

Values sharing no common superscripts (abc) differ significantly ( $P < 0.05$ ) and xy tend to differ ( $0.05 \leq P < 0.10$ ) according to Tukey's method. The effects of diet, time and their interaction are shown in Table 2.

<sup>a</sup>Coelutions with 1 - 4% of minor isomers (*cis*6-8) in the total *cis*-isomer fraction

<sup>b</sup>*Cis*-9, *trans*-11 conjugated linoleic acid as the major isomer

<sup>c</sup>The sum of odd- and branched chain fatty acids

<sup>d</sup>SFA = saturated fatty acids, MUFA = monounsaturated fatty acids and PUFA = polyunsaturated fatty acids.

<sup>e</sup>TI (thrombogenicity index) =  $(14:0 + 16:0 + 18:0) / [(0.5 \times \Sigma\text{MUFA}) + (0.5 \times \Sigma\text{n6}) + (3 \times \Sigma\text{n3}) + (\Sigma\text{n3} / \Sigma\text{n6})]$ , AI (atherogenicity index) =  $[12:0 + (4 \times 14:0) + 16:0] / (\Sigma\text{n6} + \Sigma\text{n3} + \Sigma\text{MUFA n9})$ , and Hh (hypercholesterolemic to hypocholesterolemic ratio) =  $(14:0 + 16:0) / (18:1 \text{ n9} + 18:2 \text{ n6} + 20:4 \text{ n6} + 18:3 \text{ n3} + 20:5 \text{ n3} + 22:5 \text{ n3} + 22:6 \text{ n3})$