Relationship between milk fatty acids and body energy status in Holstein Cows

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Background & Objective

Energy status (output-input) is an indicator of health & fertility in dairy cows

Negative energy status

- Mobilise body fat reserves to make up energy shortfall
- Does this impact on the types of fat in milk?

To test the association between groups of milk fatty acids and cow body energy status

Groups include (g/kg):

Saturated (SAT) & Unsaturated (UNSAT) &

Short (SCFA), Medium (MCFA) and Long Chain (LCFA)

Materials and Methods

- Research herd of Holstein cows (SAC, Scotland) across high and low concentrate dietary treatments

1. Energy Status

- Routinely recorded phenotypic traits
- Random regressions fit to get daily solutions
- EB=f[DMI-(milk+ fat+ protein+ live weight+ BCS)]

2. Milk fatty acids

- Milk routinely analysed using a mid-infrared spectrometer
- Milk FA groups predicted from the resulting spectrum

3. Associations

- Product moment correlations between each group of milk FA and energy balance
- Separately within each feeding treatment

Results – Mean values & correlations

	High Concentrate		Low Concentrate	
	Mean (sd)	r	Mean (sd)	r
EB	1.1(23.2)	-	-8.0(34.2)	-
SAT (g/kg)	70.2(8.5)	0.15	69.1(8.5)	0.39
UNSAT (g/kg)	29.7(4.8)	-0.13	30.9(4.9)	-0.23
SCFA (g/kg)	9.2(1.4)	-0.04	8.9(1.3)	0.32
MCFA (g/kg)	55.0(7.0)	0.27	52.5(7.2)	0.51
LCFA (g/kg)	36.5(6.1)	-0.20	39.5(6.3)	-0.24

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