Fatty acid composition of organic and conventional milk from UK farms

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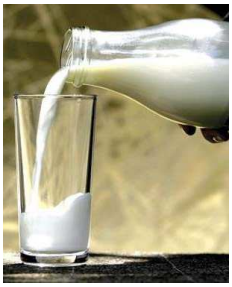
1. INTRODUCTION

Milk fat has been often linked with negative effects on human health but some milk fatty acids (FA) have been found to be beneficial for human health.

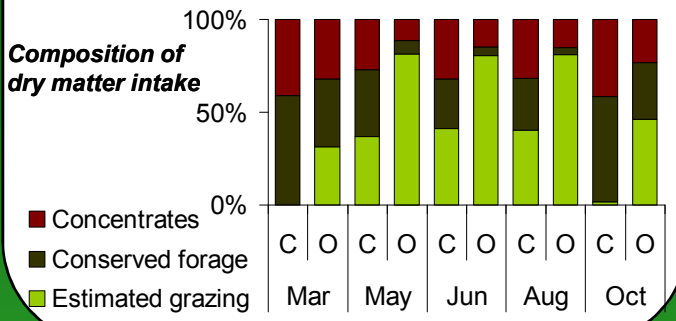


Main FA groups are:
Saturated fat (SFA): associated with increase of risk of cardiovascular diseases and high plasma concentrations of LDL-cholesterol
Unsaturated fat: Both monounsaturated (MUFA) and polyunsaturated (PUFA) are reported to benefit human health.
Oleic acid and trans-11 vaccenic (VA) are the main MUFA while linoleic (LA), α-linolenic (αLN), and rumenic (CLA9) acids are the main PUFA in milk

Question: *Does organic milk contain higher concentrations of beneficial FA?*

2. MATERIALS AND METHODS

- Sampling dates: March, May, June, August, October
- Milk and management information was collected from 10 conventional (C) and 10 organic (O) UK farms
- Statistical analysis: analysis of variance, linear mixed effects model, factors: management, month, location and farm (random)
- FA analysis: gas chromatography, 27 milk fatty acids

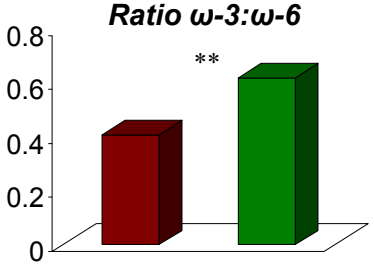


3. RESULTS

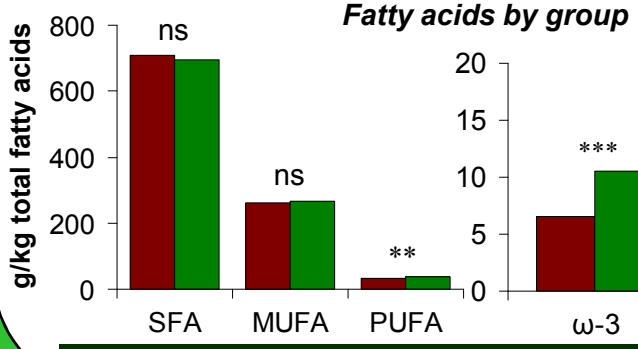
Milk production and gross composition

	Conventional	Organic	P-values
Yield (kg/cow/day)	26.0	20.6	**
Fat (g/kg milk)	40.3	41.3	ns
Protein (g/kg milk)	33.6	34.2	ns

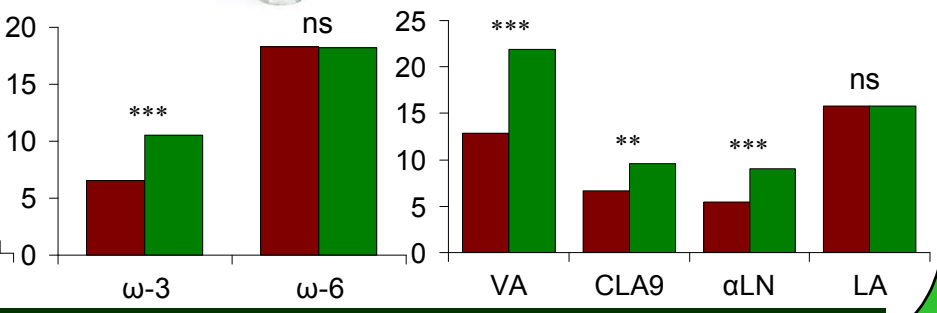
Ratio ω-3:ω-6



Fatty acids by group



Individual unsaturated fatty acids



P-values; ***: P<0.001, **: P<0.01, *ns: P>0.05*

Conventional Organic

4. CONCLUSIONS

- Organic UK milk showed higher concentrations of beneficial polyunsaturated fatty acids although the management system did not influence the saturated and monounsaturated fatty acid content of milk.
- Organic management was associated with higher levels of grazing, lower productivity and with a non significant effect on milk fat and protein concentrations.
- The positive effects on milk polyunsaturated fatty acid composition are likely to be due to differences in the cows' diet, especially greater access to grazing.

5. ACKNOWLEDGEMENTS

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