Fatty acid composition and shelf life of beef raised on biodiverse pastures

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Objectives

The present study aimed to determine whether grazing pastures high in biodiversity of botanical species resulted in meat that was different in fatty acid composition and shelf life, to that from beef reared on a more conventional rye-grass pasture

Beef Shorthorn, Longhorn, Belted Galloway and Traditional Hereford. The sites were Ingleborough (limestone, 58 plant species), Parsonage Down (chalk, 41 plant species) and Home Farm (chalk 40 species). Langford in Somerset (old ley, 14 plant species) grazed by Beef Shorthorn as a control

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Main results

When slaughtered at 30 months of age, muscle from traditional breed carcasses from diverse pastures were low in fat which resulted in high proportions of polyunsaturated fatty acids and less saturates.

Marbling fat was below 2% of muscle weight, 18:2n-6 was above 4% of total fatty acids, 18:3n-3 was above 1.7%, 20:5 n-3 was above 1% and 22:6n-3 was above 0.1%. These values for n-3 PUFA proportions are higher than reported elsewhere in the literature .

This resulted in a P:S ratio of ~0.3 which is closer to the desirable value of 0.4 which is the aim in ruminant studies.

Lipid oxidation in muscle, measured as TBARS, was uniformly low and lower than seen previously and vitamin E concentration was higher, with values around 6.0 mg/kg.