

Feeding regimes affect fatty acid composition in Australian beef cattle

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Background - There is growing evidence that red meat contributes significantly to the intake of omega 3 long chain PUFA in western diets. The type of feeding regime used in animal production, can influence the lipids in red meat due to the fatty acid composition of the feed. Pasture feed being relatively rich in α -linolenic acid (18:3n-3), while grain is relatively rich in linoleic acid (18:2n-6).

Objective - To determine the effect on beef fatty acid profile of varying length of grain feeding compared with grass feeding.

Design - Samples of rump, strip loin and blade cuts were obtained from eighteen cattle from each of three feeding regimes (pasture fed, short term grain feeding STGF, and long term grain feeding LTGF). All samples were analysed in triplicate as lean tissue only, using a standard chloroform – methanol extraction and capillary column gas-chromatograph fatty acid quantification.

Outcomes - Total fat, saturated and monounsaturated fatty acids were all significantly higher in the LTGF animals. The grass fed animals had higher levels of omega 3 PUFA in all three cuts, with combined EPA + DHA reaching levels in blade and strip loin that would meet Australian Food Standards classification as a “source” of omega-3, with the rump cut reaching this level in the STGF group also. Rump from the grass fed animals was a relatively rich source of EPA + DHA and would qualify as a “good source” of omega 3.

Conclusions - This study was able to show that pasture feeding of Australian cattle maximises omega-3 PUFA content and minimizes trans 18:1 fatty acid levels relative to grain feeding. Furthermore, LTGF results in elevated total fat and saturated fat content relative to STGF or grass feeding in lean cuts of Australian beef.