



Effect of the feeding system on intramuscular fatty acids and conjugated linoleic acid isomers of beef cattle, with emphasis on their nutritional value and discriminatory ability

Cristina P.M. Alfaia^a, Susana P. Alves^b, Susana I.V. Martins^a, Ana S.H. Costa^a, Carlos M.G.A. Fontes^a, José P.C. Lemos^a, Rui J.B. Bessa^b, José A.M. Prates^{a,*}

^aCIISA, Faculdade de Medicina Veterinária, Avenida da Universidade Técnica, Pólo Universitário do Alto da Ajuda, 1300-477 Lisboa, Portugal

^bREQUIMTE, Unidade de Produção Animal, L-INIA, Instituto Nacional dos Recursos Biológicos, Fonte Boa, 2005-048 Vale de Santarém, Portugal

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ABSTRACT

Thirty two Alentejano purebred bulls were used to investigate the effect of four feeding systems (pasture only, pasture feeding followed by 2 or 4 months of finishing on concentrate, and concentrate only) on meat fatty acid composition (GC-FID), including conjugated linoleic acid (CLA) isomeric distribution (Ag[+]-HPLC-DAD). In addition, meat fatty acids and CLA isomers were used to elucidate the impact of the different feeding regimens on the nutritional value of intramuscular fat and their usefulness as chemical discriminators of meat origin. The diet had a major impact on the fatty acid composition of beef (affected 27 of 36 fatty acids and 10 of 14 CLA isomers), which was independent of the fatty acid concentration. Beef fat from pasture-fed animals had a higher nutritional quality relative to that from concentrate-fed bulls. Finally, meat fatty acid composition was an effective parameter to discriminate between ruminant feeding systems, including different finishing periods on concentrate.

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Abbreviations: ALA, α -linolenic acid; CLA, conjugated linoleic acid; FAME, fatty acid methyl esters; MUFA, monounsaturated fatty acids; PDO, protected designation of origin; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids; TFA, trans fatty acids.

* Corresponding author. Tel.: +351 213652890; fax: +351 213652895.

E-mail address: japrates@fmv.utl.pt (J.A.M. Prates).

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