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Contact Empa

Dr. Andrea Fischer

Phone +41 58 765 46 59
andrea.fischer@empa.ch

Dr. Joachim Mohn

Phone +41 58 765 46 87
joachim.mohn@empa.ch



P11 Isotope ratio mass spectrometry to detect differences in four compartments of Simmental cows fed on C3 and C4 diets

S. Pianezze¹, M. Corazzin², L. Bontempo³, A. Sepulcri², E. Saccà²,
M. Perini^{1,*} & E. Piasentier²

¹Centro di Trasferimento Tecnologico, Fondazione Edmund Mach, San Michele all'Adige (TN), Italy

²Dipartimento di Scienze Agroalimentari, Ambientali e Animali, University of Udine, Udine (UD), Italy

³Centro Ricerca e Innovazione, Fondazione Edmund Mach, San Michele all'Adige (TN), Italy

*presenting author: matteo.perini@fmach.it

Fatty acids (FAs) can be found in adipose tissues and muscles of bovines. They may derive from the diet only, as for the essential FAs, and/or from *de novo* endogenous synthesis [1]. The FAs metabolic pathway starts in the rumen with the hydrolysis of dietary complex fats into long chain FAs [2]. Then, the FAs released during this process are converted into saturated ones through biohydrogenation [3]. The FAs reach the liver carried by the blood, whose flow, together with the FAs concentration, influences their supply to this organ [4]. The deposition of the FAs into the animal tissue represents the final step of their metabolism.

The aim of this study was to discriminate between two groups ($n_{TOT}=13$) of cows fed on different diets and to widen the knowledge about the FAs metabolic path in the bovine organism. The first group was fed on a C3 products-based diet ($\delta^{13}C_{C3_BULK_DIET} = -32.55\text{‰}$) while the second one was fed on a C4 products-based one ($\delta^{13}C_{C4_BULK_DIET} = -18.74\text{‰}$). Beside the diet, three compartments of the animals were considered: rumen, liver and meat. The fat extracted from the four matrices was both analysed through EA-IRMS, as a bulk sample, and through GC-C-IRMS, after a derivatization process which made it possible to measure the $\delta^{13}C$ of five FAs (C16:0, C18:0, C18:1n-9, C18:2n-6 and C18:3n-3). A good discrimination between C3 and C4 groups was achieved. Moreover, different trend of $\delta^{13}C$ passing from the diet to the loin were found as for C3 and C4 groups.

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