

Rumen protected conjugated linoleic acid (CLA) methyl esters decrease milk fat and increase CLA concentration in goat milk

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Background – Conjugated linoleic acids (CLA's) are extensively bio-hydrogenated in the rumen by rumen micro-organisms. When CLA's are infused into the abomasum of dairy cows, milk fat content is reduced by 30-40%; the effect is due to the *trans* 10 *cis* 12 isomers (1, 3).

Objective – To protect CLA methyl esters (ME) from ruminal metabolism, (RP-ME-CLA) and to assess their effect on milk fat content and composition.

Design – The basal ration of 6 goats was supplemented with RP-ME-CLA containing 10g each of *cis* 9 *trans* 11 and 10 *trans* *cis* 12 isomers, to assess their effects on milk fat composition.

Outcomes – RP-CLA-ME depressed milk fat content of goats by 35-40%; similar to CLA isomers infused into the abomasum (1) or where CLA-ME-calcium salts or RP-CLA-ME were infused intra-uminally (3). Feeding RP-CLA-ME increased the level (g/100g) of *cis* 9 *trans* 11 and *trans* 10 *cis* 12 isomer in goat milk from 0.64±0.04 to 4.07±0.22 and 0.0 to 2.8±0.17 respectively. The transfer of the *cis* 9 *trans* 11 and *trans* 10 *cis* 12 isomers from the supplement into milk fat was 20 and 13% respectively; values being higher than the transfer efficiency reported for cows where CLA-ME-calcium salts or RP-CLA-ME were infused intraruminally ie 3.2 and 7% respectively (3).

Conclusions – CLA-ME can be protected from ruminal metabolism. Inclusion of RP-CLA-ME supplement in the diet reduced milk fat content by 35-40% and significantly increased the concentration of CLA isomers in milk.

1. Mackle, TR, Kay, JK, Auldist, MJ, McGibbon, AKH, Philpott, BA, Baumgard, LH, Bauman, DE. J. Dairy Sci 2003; 86, 644-52.
2. Gulati, SK, May, C, Wynn, PC, Scott, TW. Anim Fd Sci & Tech 2002; 98: 143-52.
3. de Veth, MJ, McFadden, JW, Griinari, JM, Gulati, SK, Luchini, ND, Bauman, DE. J. Dairy Sci (ADSA Conference). 2003 (in press)