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

SK Gulati¹ C.Wijesundera², E Byers³, TW Scott⁴

¹Faculty of Veterinary Science, University of Sydney, NSW, 2006 ²Food Science Australia, Werribee, Victoria 3030 ³Goolagong Goat Stud & Dairy, Kemps Creek, NSW 2342 ⁴Rumentek Industries, Parkside, SA, 5001

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 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 intraruminally (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.