

The effects of supplementation with sunflower and soybean oils on the fatty acid profile of milk fat from grazing dairy cows

Oldemiro A. REGO^{a*}, Henrique J.D. ROSA^a, Paula V. PORTUGAL^b,
Tiago FRANCO^a, Carlos M. VOUZELA^a, Alfredo E.S. BORBA^a,
Rui J.B. BESSA^b

^a Departamento de Ciências Agrárias-CITA-A, Universidade dos Açores,
9701-851 Angra do Heroísmo, Portugal

^b Departamento de Nutrição Animal, Estação Zootécnica Nacional, Fonte Boa,
2000-763 Santarém, Portugal

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Abstract – The objective of this study was to observe the effect of supplementation with vegetable oils (VO) on the fatty acid profiles and conjugated linoleic acid (CLA) content of milk fat. Twelve dairy cows in mid lactation fed on pasture were blocked by body weight, milk production and days in lactation and randomly allocated from blocks to 3 treatments repeated in a Latin square design with periods of 28 day duration. The treatments were as follows: cows on pasture supplemented with 5 kg concentrate per head per day (C), supplemented with 4.5 kg concentrate + 0.5 kg sunflower oil per head per day (SFO) and supplemented with 4.5 kg concentrate + 0.5 kg soybean oil per head per day (SBO). The animals were grazed as a group and were stocked at 2.5 heads per hectare. The treatments had no effect on milk yield or protein yield and content, but decreased milk fat yield and content ($P < 0.05$). Milk fat from the cows supplemented with VO had a lower concentration of short and medium chain fatty acids ($P < 0.05$) and a higher concentration of long chain fatty acids ($P < 0.05$). The addition of VO to the diet also resulted in a reduction in saturated and an increase in unsaturated fatty acids of milk fat ($P < 0.05$). The hypercholesterolemic fatty acids in milk fat (i.e. C12:0, C14:0 and C16:0) decreased while the concentration of oleic and linoleic acids increased with VO ($P < 0.05$). There was no effect on linolenic acid. Finally, the inclusion of VO in the diet increased ($P < 0.05$) the contents in milk fat of the various *cis/trans* isomers of oleic acid (including *trans*-vacenic, TVA) and of CLA which increased by 61%.

dairy cow / conjugated linoleic acid / fatty acids / pasture / vegetable oils

* Corresponding author: orego@angra.uac.pt