



OLIVE OIL BY-PRODUCTS IMPROVE FATTY ACID PROFILE OF MILK AND CHEESE IN EWE'S DIETS



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INTRODUCTION

- Olives are a major crop in Mediterranean countries, Argentina and Chile.
- Olive oil extraction is associated with the production of large quantities of by-products: olive cake and lampante olive oil.
- The high oleic acid content in olive by-products may enhance the nutritional value of animal products for human consumption.

OBJECTIVE

The objective of this study was to evaluate the effect of the dietary supplementation of olive cake and lampante olive oil on the fatty acid profiles of the milk and cheese of ewes.

MATERIALS AND METHODS

Two experiments were conducted separately.

ANIMALS

- In experiments 1 and 2:

- Nine lactating ewes (n=9) were used.
- Ewes were grouped in a replicated (n=3) 3 x 3 Latin square design, that included three experimental periods of 10 d each (6 d of diet adaptation and 4 d of data collection) and three dietary treatments.

DIETS

- Basal diet: Based on alfalfa hay, ground corn grain and soybean meal supplemented with:
 - Experiment 1: 0, 281 and 751 g/d/ewe of dry olive cake
 - Experiment 2: 0, 36 and 88 g/d/ewe of lampante olive oil

STATISTICAL DESIGN

- 3x3 Latin square design
- The fixed effects were experimental periods and treatment; the random effect was the ewe.
- Because cheeses were made from mixed milk from ewes on the same treatment, a one-way ANOVA was applied to their fatty acid profile data.

RESULTS

In experiment 1, dry matter intake, milk yield and milk composition (protein and fat) were not affected by dietary treatments. In experiment 2, except for total solids, dry matter intake and milk composition were not affected by dietary treatments. The dietary intervention chosen in both experiments led to some changes in the fatty acid profile in ewes' milk and cheese (Figures 1 and 2).

REFERENCES

Effect of dietary inclusion of lampante olive oil on milk and cheese fatty acid profiles of ewes. 2013, *Grasas y Aceites*. 64 (3), pp. 295-303. DOI: 10.3989/gya.108312.
Feeding olive cake to lactating ewes improves fatty acid profile of milk and cheese. 2013, *Animal Feed Science and Technology* 184 (2013), pp. 94-99 DOI information: 10.1016/j.anifeedsci.2013.05.016.

Figure 1. Ewes fed dry olive cake

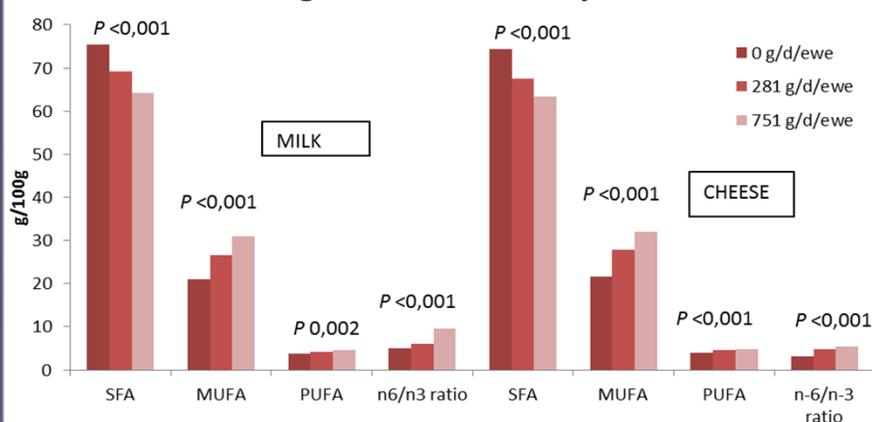
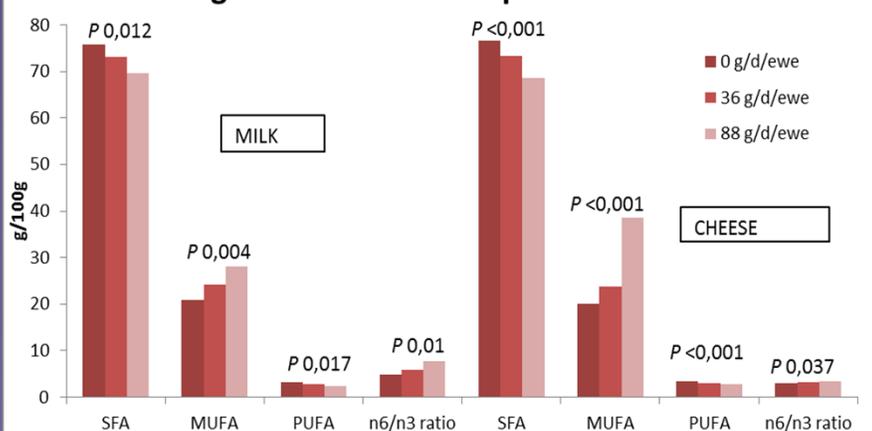


Figure 2. Ewes fed lampante olive oil



CONCLUSIONS Changes observed both experiments in milk and cheeses were desirable from a human nutrition perspective. The fatty acid profile of sheep milk and cheese can be significantly improved by natural means (increases monounsaturated and polyunsaturated FA, and the n6/n3 ratio, and decreases saturated FA), through supplementation of olive by-products in traditional sheep production systems of dry areas of Chile.

ACKNOWLEDGMENTS FIA PYT-2008-0213 (Fondo de Innovación Agraria, Ministerio de Agricultura, Chile)