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Proteomics of the mitochondrial proteome in dairy goats (*Capra hircus*)

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Introduction

Goat milk production is important in the EU, being Italy, France, Spain and Portugal the main producers of the commercialized goat milk and cheese. Nevertheless seasonal weight loss (SWL) poses limitations to animal production in Tropical and Mediterranean regions, conditioning producer's incomes and the nutritional status of rural communities. It is of the utmost importance to produce strategies to oppose adverse effects of SWL. Breeds that have evolved in harsh climates have acquired a tolerance to SWL through selection. Most of the factors determining such ability are related to biochemical metabolic pathways and are likely important biomarkers to SWL. In this study, a gel based proteomics strategy (BN: Blue-Native Page and 2DE: two-dimensional gel electrophoresis) was used to characterize the mitochondrial proteome of the secretory tissue of the caprine mammary gland. In addition, we have also conducted an investigation of the effects of weight loss in two dairy goat breeds with different levels of adaptation to nutritional stress: Majorera (tolerant) and Palmera (susceptible) from the Canary Islands (Spain).

Material and methods

Experimental design and sample collection: the study was conducted using 10 Majorera and 10 Palmera dairy goats, divided in 4 sets, 2 for each breed: underfed group fed on wheat straw ad libitum (restricted diet, so their body weight would be 15-20% reduced by the end of experiment), and a control group fed ad libitum on commercial feed (Lérias *et al.*, 2013). After 22 days, mammary gland biopsies on the animals were conducted following standard procedures and under competent veterinary supervision.