EFFECT OF BROCCOLI BY-PRODUCT AND ARTICHOKE PLANT ON BLOOD METABOLITES AND UREA OF GOAT'S MILK

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INTRODUCTION

Broccoli and artichoke are important cultivations in Mediterranean region, so there exist large amounts of by-products of these crops. However, short seasonality and high water content limit their use in animal feeding. Silage, through anaerobic process, can preserve these feedstuffs and ensure their quality over time.

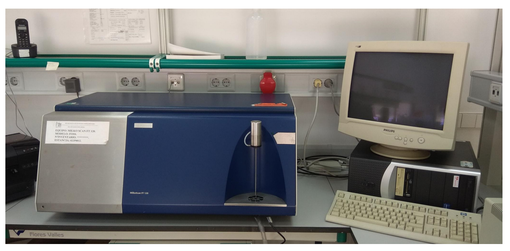
Wastes of vegetable harvest and canning by-products are very important feeds for ruminants, and their utilization is particularly important in relation to ratio cost-effectiveness for farms close to the factories. Despite the importance and use in feeding of these by-products in their production zone, research carried out to evaluate the nutritive value is limited. Besides the unknowledge about consequences derived from incorporation of these feedstuffs on animal health status, due to the possible outbreak of metabolic disorders.

OBJECTIVE

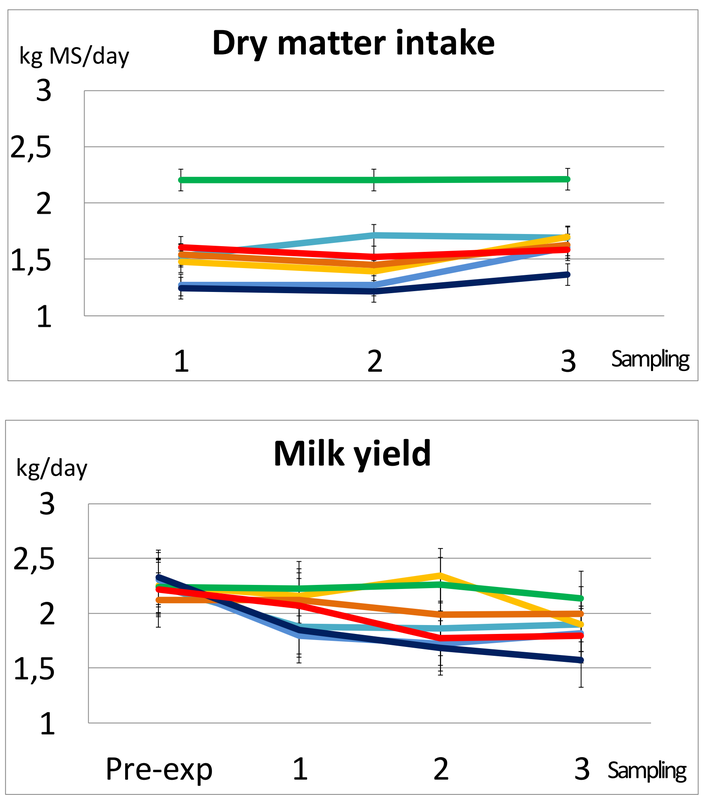
The aim of this experiment was to study the effect of including two ensiled feedstuffs (broccoli by-product and artichoke plant) in three different levels (25%-40%-60%, on dry matter basis) in Murciano-Granadina goats diets on health status during short term.

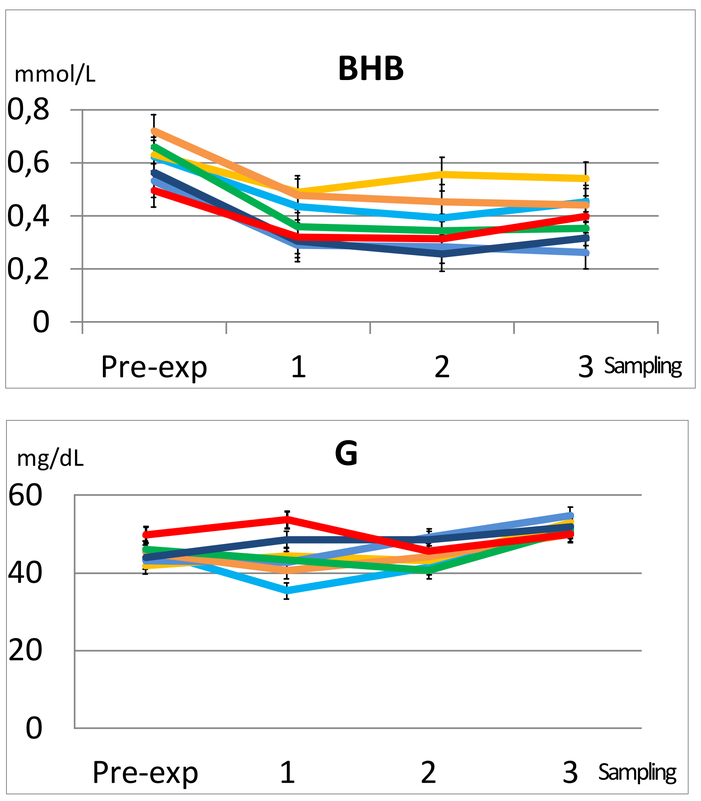
MATERIAL AND METHODS

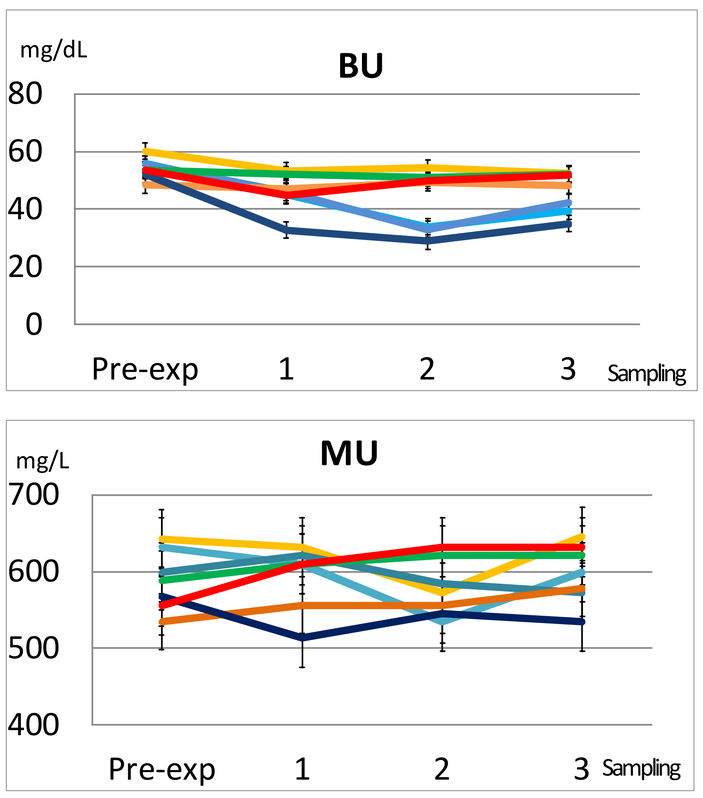
- 63 Murciano-Granadina goats distributed in 7 homogenous groups
- 7 iso-energetic and iso-proteic diets
  - Control (T)
  - Broccoli by-product: 25% (B25), 40% (B40) and 60% (B60), on dry matter basis
  - Artichoke plant: 25% (P25), 40% (P40) and 60% (P60), on dry matter basis
- 4 samplings
  - Pre-experimental
  - 3 experimental (1 sampling/week)
- Samples
  - Individual udder milk—> milk urea content (MU) by near -infrared spectroscopy (MilkoScanTM FT2, Foss)
  - Blood samples—> serum glucose (G), β-hidroxybutirate (BHB) and urea (BU) by enzymatic spectrophotometry
- Statistical analysis
  - Linear mixed model (Proc. GLIMMIX, SAS v 9.2, 2012)
  - Fixed effects: diet, nº of sampling and their interaction
  - Random effect: animal

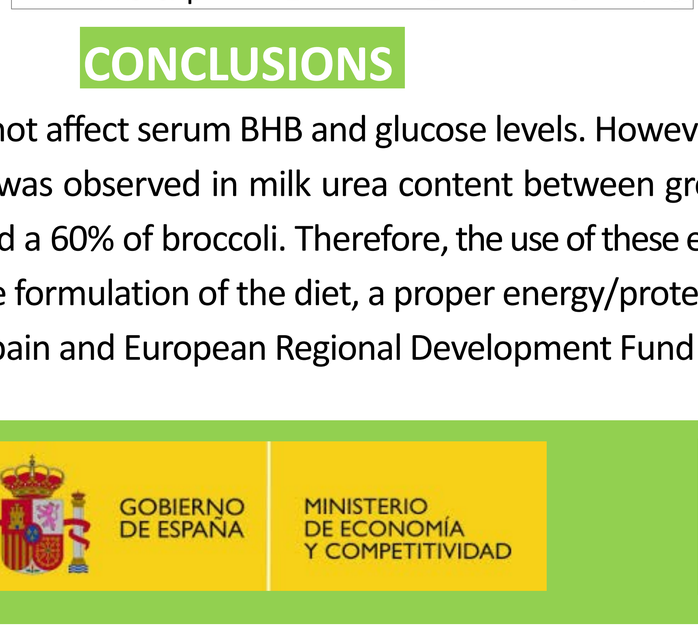


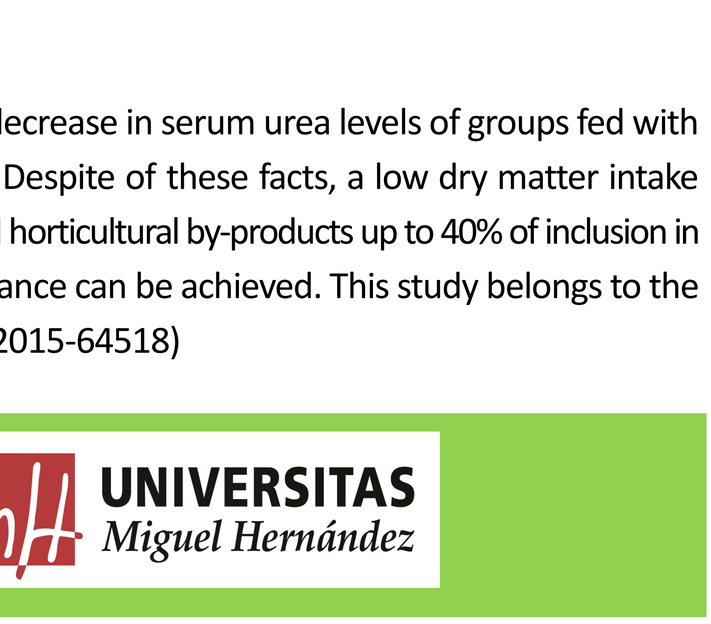
RESULTS











CONCLUSIONS

The inclusion of broccoli by-product and artichoke plant silages did not affect serum BHB and glucose levels. However, a decrease in serum urea levels of groups fed with broccoli by-product was observed. Finally, any relevant difference was observed in milk urea content between groups. Despite of these facts, a low dry matter intake and milk yield were observed in animals fed with a diet that included a 60% of broccoli. Therefore, the use of these ensiled horticultural by-products up to 40% of inclusion in dairy goats feeding is not harmful to their health and, with a suitable formulation of the diet, a proper energy/protein balance can be achieved. This study belongs to the project supported by Ministerio de Economía y Competitividad of Spain and European Regional Development Fund (AGL2015-64518)