

THE EFFECT OF DIETARY NEUTRAL DETERGENT FIBER SOURCE ON LAMBS GROWTH PERFORMANCE AND MEAT NUTRITIONAL VALUE

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OBJECTIVES



Evaluate the effect of the **source of neutral detergent fiber (NDF)** used in **complete ground diets** on **lambs growth, carcass quality and meat nutritional value**



CONCLUSIONS

Feeding strategies to improve the nutritional value of lamb meat are influenced by the dietary NDF source

- Alfalfa NDF was more effective on preventing the τ_{10} -shift than NDF from agro-industrial by-products

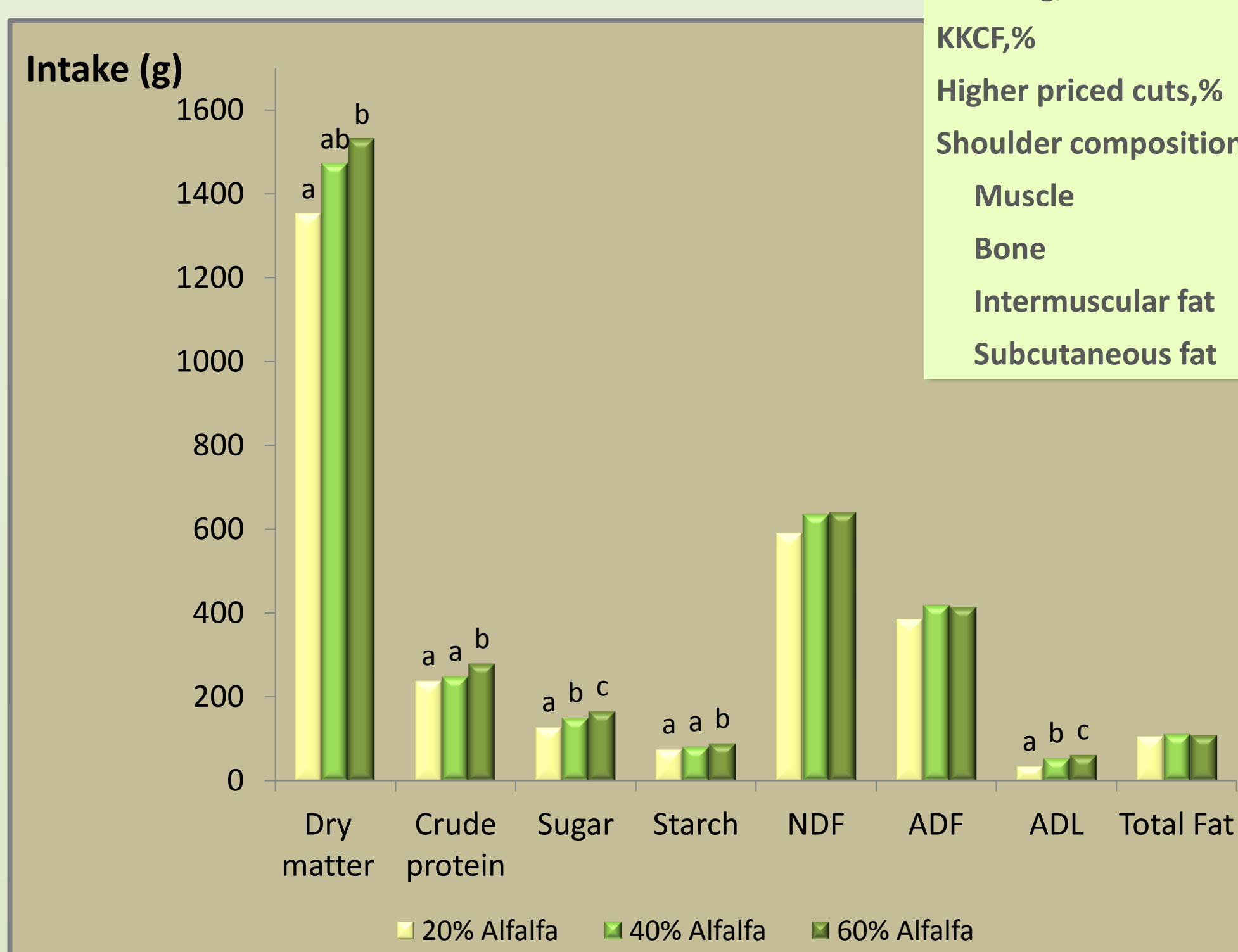
- Forty percent of alfalfa in diet reduced the severity of τ_{10} -shift, but other factors should be considered as the forage particle size or the buffering capacity of the diet.

BACKGROUND

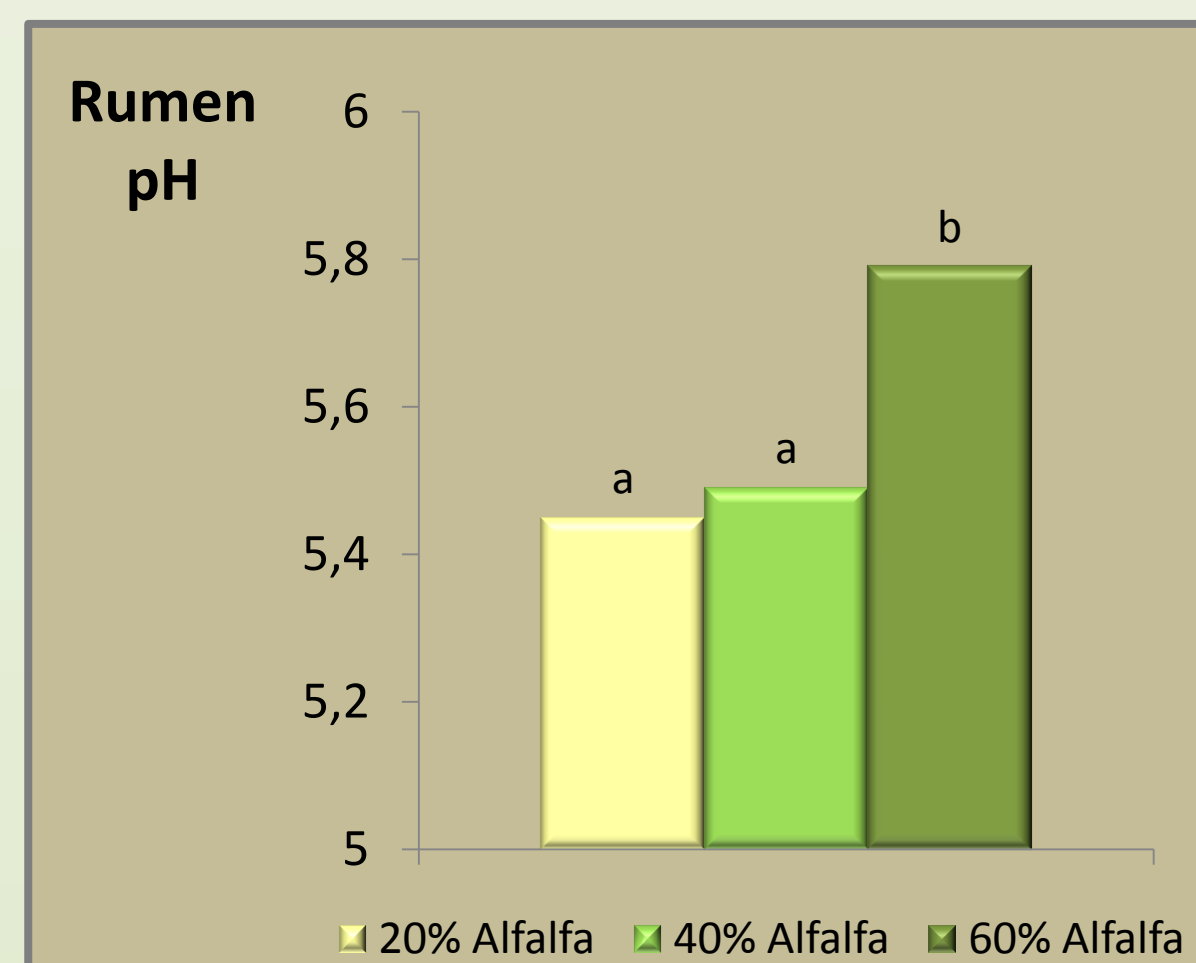
In ruminants fed high-starch and low-fiber diets, the prevalent rumen biohydrogenation (BH) pathways favours the biosynthesis of $\tau_{10-18:1}$ and counteract the biosynthesis of the healthy $\tau_{11-18:1}$ (vaccenic acid) by, with negative impact in the nutritional quality of the product (τ_{10} -shift). The causes of the of τ_{10} -shift are still unclear, since it has already occurred in lambs fed with diets with low starch content and high fiber content.

We hypothesize that the structure and chemical composition of fibrous fraction of the diet may influence BH and the occurrence of the undesirable τ_{10} -shift.

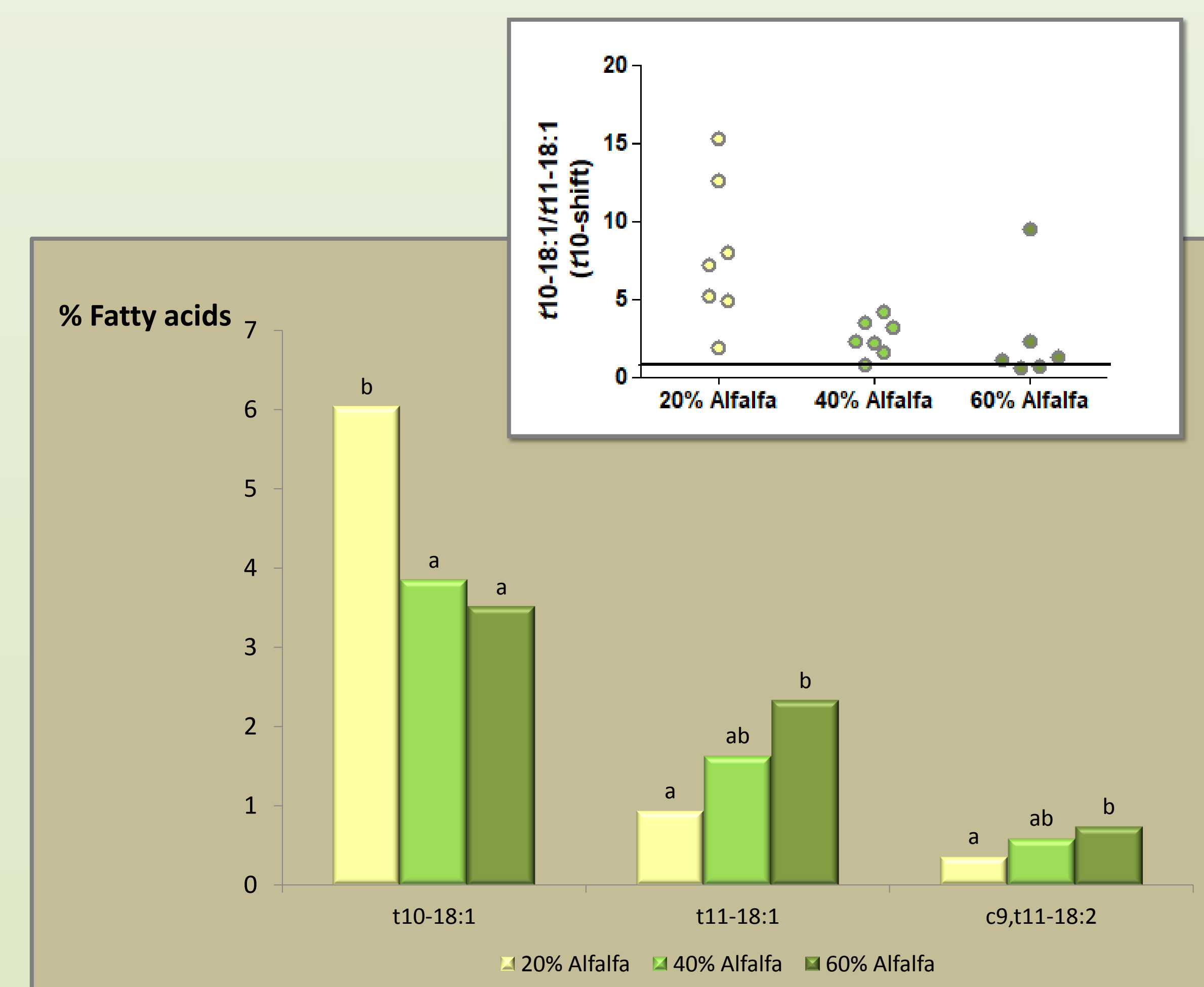
RESULTS



Carcass traits	Mean ± sd
Initial body weight (kg)	24.6 ± 2.21
Hot carcass weight (kg)	18.2 ± 1.60
Dressing, %	49.4 ± 2.63
KKCF, %	2.4 ± 0.76
Higher priced cuts, %	54.5 ± 0.96
Shoulder composition, %	
Muscle	60.8 ± 1.79
Bone	19.0 ± 1.53
Intermuscular fat	11.1 ± 1.36
Subcutaneous fat	9.1 ± 2.12



Meat quality traits	Mean ± sd
pH	5.6 ± 0.08
Intramuscular fat, mg/g DM	127 ± 10.4
Cooking loss, %	30.1 ± 2.36
Shear force, N/ cm ²	27.0 ± 3.52
Colour	
L*	41.6 ± 1.95
a*	18.6 ± 1.23
b*	5.7 ± 0.95
Colour stability (0 to 7d storage)	6.4 ± 1.84
TBARS, 7th day storage	1.3 ± 0.51



Intake of dry matter, crude protein, sugar, starch and ADL increased with alfalfa level in the diet. Growth rate (290 g/ day), carcasses and meat quality traits were not influenced.

The alfalfa level in diets increased the rumen pH, $\tau_{11-18:1}$ and $c_{9,\tau_{11-18:2}}$ and reduced the $\tau_{10-18:1}$ and τ_{10} -shift.

Material and Methods



20 lambs individually housed and fed for 6 weeks with:

3 complete ground diets with **low-starch**, **high oil** and **similar NDF content**, but with **different composition**

NDF source: **dehydrated alfalfa (200, 400 and 600 g/kg DM)** balanced with soybean hulls and dehydrated citrus and beet pulps

Evaluation of the **effects** on animal performance, carcasses, meat quality and lipid composition.