

EVALUATION OF ETHANOL YEAST AS AN ALTERNATIVE PROTEIN SOURCE IN SHEEP DIETS



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Abstract

Ethanol yeast (EY) is a co-product of fuel ethanol production and may have potential as a protein source for ruminant animals. The objective of this experiment was to determine if EY could replace soybean meal (SBM) in feeder lamb diets. Three diets were fed to lambs (initial BW 36.3kg \pm 6.6) in which EY replaced SBM protein. Treatments were; control (100% SBM), (50/50 SBM/EY mix, and 100% EY). Lambs were fed *ad libitum* for 56 d using GrowSafe technology to record individual animal feed intake. At trial completion, 24 lambs were utilized to determine digestibilities of the diet. Differences in total intake were observed between diets ($P=0.02$); as EY inclusion rate increased, feed intake decreased. However, a trend was observed in improved G:F ratio ($P=0.09$) with higher EY inclusion. There were no differences in DM and NDF digestibilities among diets, but ADF digestibility ($P<0.001$) was lower in the diets containing EY and N digestibility was greatest in the SBM diet.

Introduction

•With the expansion of biofuel production, research has been aimed at utilizing co-products in animal feeds.

•Ethanol yeast (EY)

- Converts corn into fuel ethanol.
- Protein biomass (CP=52.0%).

•Gause and Trushenski (2012)

- EY could replace 75% of the protein supplied by fish meal in the diets of Sunshine Striped Bass.
- Reduced performance at the 100% replacement levels was credited to poor-palatability of EY.

•May have potential as a cost-effective source of protein for multiple animal species.

Objectives

•Conduct a feeding trial

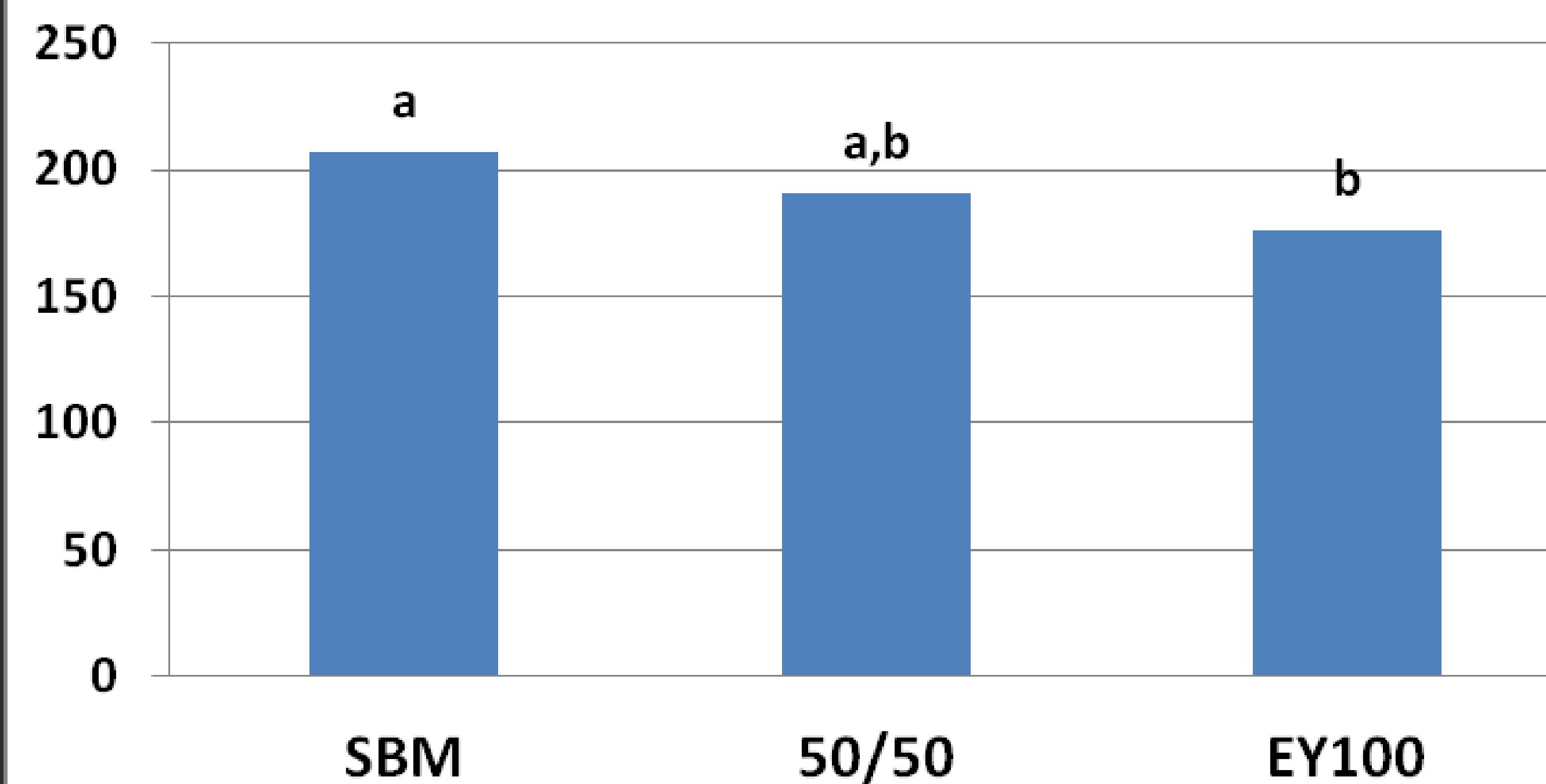
- To explore the effect of EY on performance of lambs when fed diets replacing either 0, 50, or 100% of protein supplied by soybean meal (SBM).

•Conduct a digestibility trial

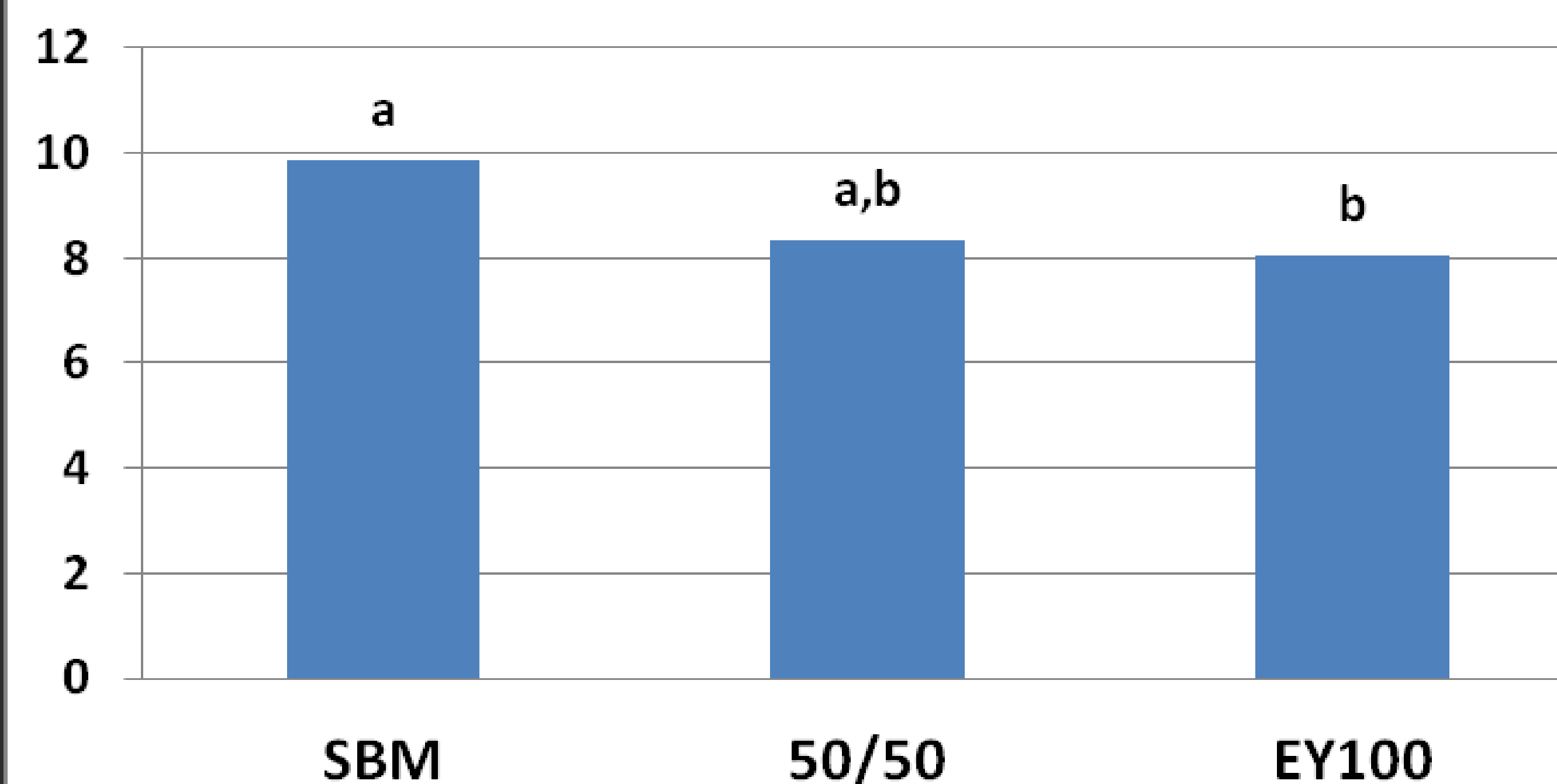
- To measure N, DM, NDF, and ADF digestibility of EY when fed to lambs.



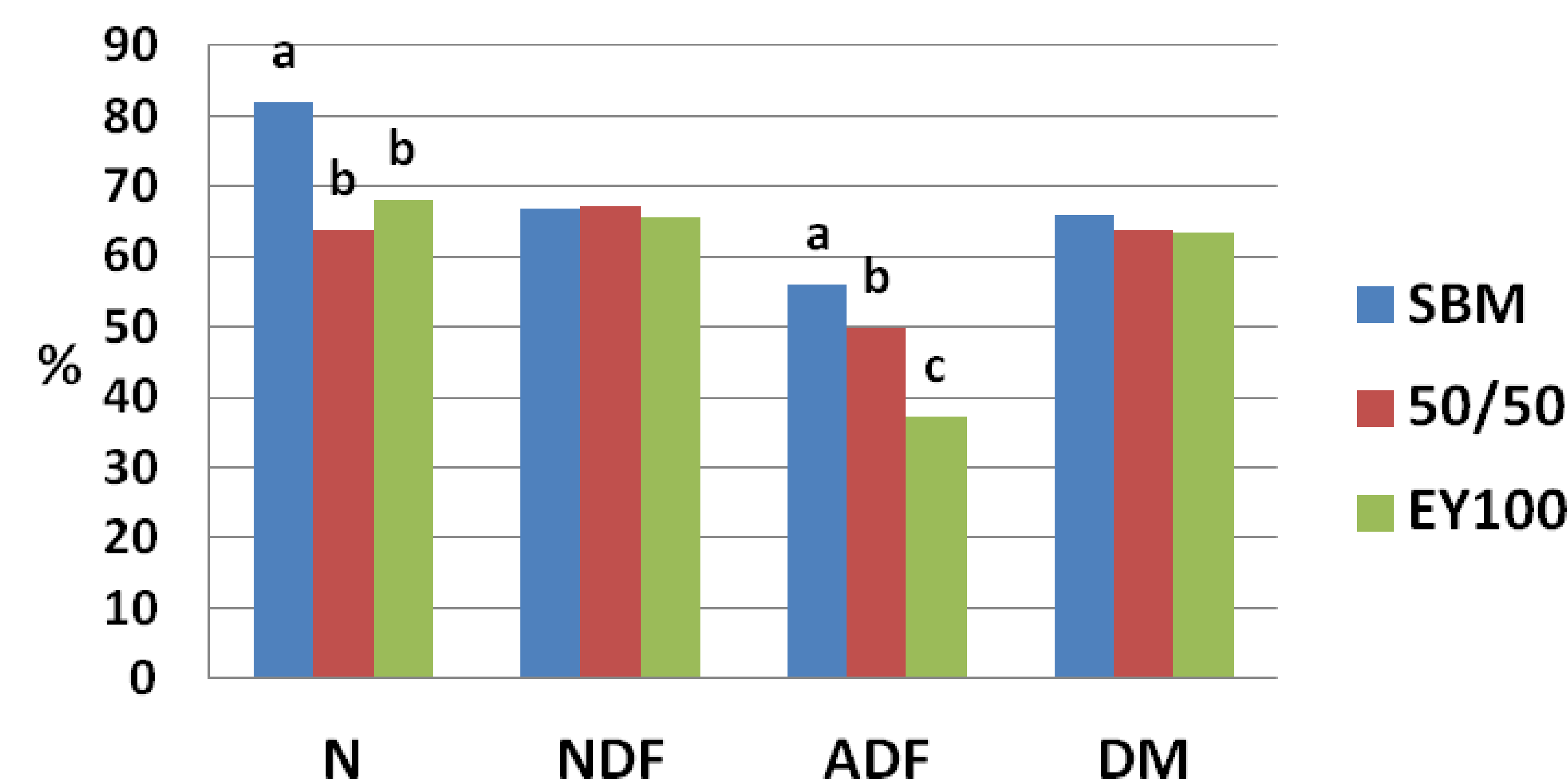
Feed Intake (% BW)



Feed:Gain



Digestibility



Materials & Methods

•24, Feeder lambs (initial BW 36.3kg \pm 6.6).

•Treatments were three diets;

- Control (100% SBM)
- 50/50 SBM/EY mix
- 100% EY

•Lambs were fed *ad libitum* for 56 d using GrowSafe technology to record individual animal feed intake.

•At feeding trial completion, feces was collected and utilized to determine digestibilities of the diets.

Results

•Feeding trial

- Differences in total intake between diets ($P=0.02$); As EY inclusion rate increased, feed intake decreased.
- No difference found in ADG
- A trend was observed in improved Feed:Gain conversion ($P=0.09$) with higher EY inclusion.

•Digestibility

- ADF decreased with higher inclusion levels of EY.
- SBM diets showed highest N digestibility, but no significant differences were observed between the 50/50 and EY100 diets.
- No differences in DM and NDF digestibility between diets.

Conclusions

•Ethanol yeast showed success as an effective protein source in sheep diets.

- Lower intake, N digestibility, and ADF digestibility were measured in diets with higher inclusion levels of EY.
- However, growth and feed efficiency were not sacrificed under the conditions of this experiment.

Implications

•Ethanol yeast showed potential as an alternative protein source for sheep replacing 100% of SBM without reducing growth.

Acknowledgements

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