



The influence of rapeseed meal upgraded by bioprocessing and enzyme supplementation on growth performance and nutrient digestibility in pigs

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INTRODUCTION

The EU relies on soya imports to satisfy the demand for protein of the animal feed industry. Therefore, to reduce EU dependency, the search and use of alternative locally grown protein sources is strongly recommended.

Bioprocessing of rapeseed meal (RSM), a by-product of oil industry, can increase its protein content resulting in a more attractive feedstuff for animal feeding.

OBJECTIVE

Evaluate the inclusion of a protein-rich RSM upgraded by bioprocessing in combination with enzymes supplementation into diets for growing pigs.

MATERIAL & METHODS

• Experimental treatments (factorial 2X3):

- T-1: Conventional RSM (cv RSM) + No enzymes
- T-2: Upgraded RSM (hp RSM) + No enzymes
- T-3: cv RSM + Proteases (*)
- T-4: hp RSM + Proteases (*)
- T-5: cv RSM + Proteases (*) + NSPases (*)
- T-6: hp RSM + Proteases (*) + NSPases (*)

(*) Post-pelleting application of 67g/MT protease FAG-004 and 250 g/MT NSPase FAG-013, respectively.

• Animals and feeding

- 144 pigs ([Yorkshire x Landrace] x Pietrain)
 - 33.0 ± 0.57 kg BW; (½ males, ½ females)
- 12 blocks BW at start; 72 pens with 2 pigs/pen
- Ad libitum feed for 6 weeks (growing phase)

• Measurements, sampling and analysis

- Body weight and feed intake after 6 weeks
- Collection of fresh faeces by day 42
- Faeces oven-dried 72h at 60°C
- ATTD using TiO₂ as indigestible marker

	RSM conventional	Upgraded RSM
Ingredients, %		
RSM	24.0	22.0
Wheat + Barley	33.6	40.0
Corn + Rice + Starch	33.0	28.6
Other	9.4	9.4
Nutrients		
Protein, %	15.75	15.25
NE, MJ/kg	9.51	9.41
LYS, g/kg	10.52	10.45
sid-LYS, g/kg	8.90	8.90



Feed-a-Gene is a European H2020 project involving 23 partners which aims to adapt feeds, animals and feeding techniques to improve the efficiency and sustainability of pig, poultry and rabbit production systems. It is coordinated by INRAE (France), started in March 2015 and will last 5 years. The project aims to reduce the environmental impact of monogastric livestock production by improving and diversifying animal diets and feed technologies and by integrating new selection criteria for these animals. The Feed-a-gene project further aims to develop new management systems for precision feeding and precision farming and to evaluate the overall sustainability of the different management solutions proposed in the project.

RESULTS

Figure 1. Influence of the RSM (conventional vs. upgraded) and exogenous enzymes (no enzymes, proteases, and proteases+NSPases) inclusion into diets on performance of growing pigs

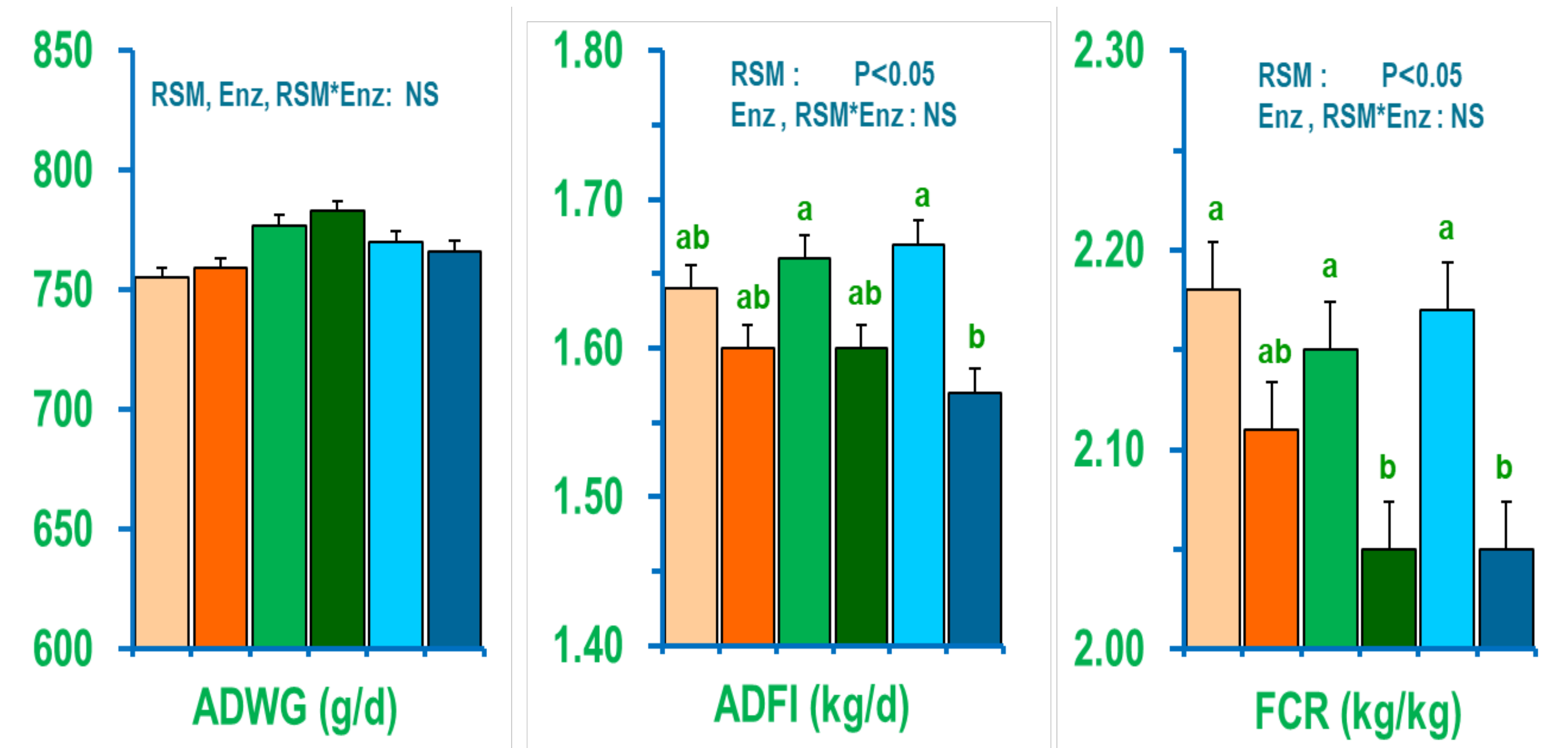
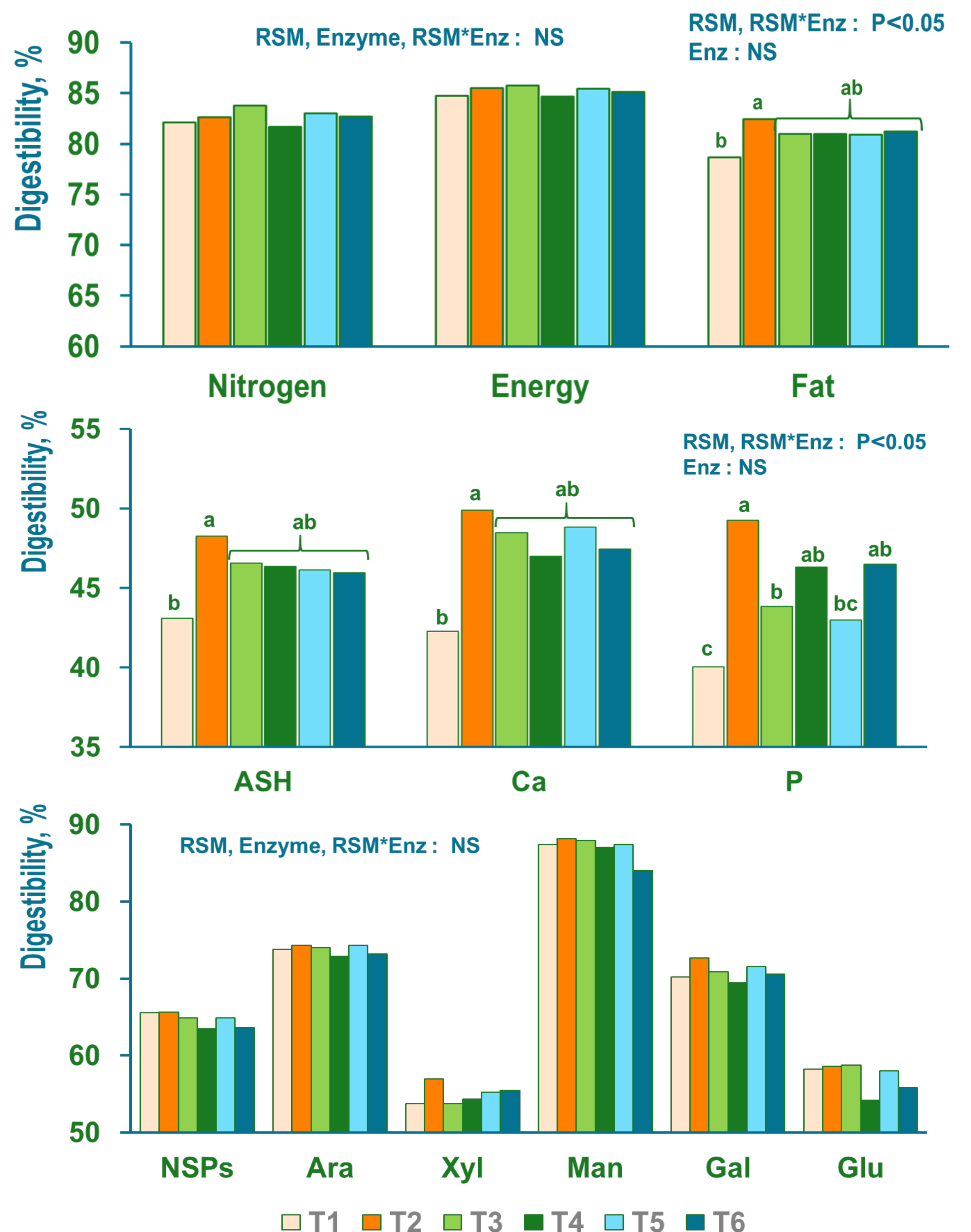


Figure 2. Major nutrient ATTD digestibility of growing pigs fed with diets containing conventional and/or upgraded RSM and exogenous enzymes (no enzymes, proteases, and proteases+NSPases)



CONCLUSION

The RSM upgraded by bioprocessing improves feed efficiency of growing pigs and can positively contribute to reduce the import of proteins for animal feeding.

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