



Replacement of Soybean Meal with Canola Meal in Weaned Pig Diets

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Summary

Fibre content is three times higher in canola meal than soybean meal, and may limit nutrient availability. The present study determined whether canola meal could replace soybean meal in weaned pig diets with a balanced digestible nutrient content. Increasing content of canola meal increased fibre content in diets, and decreased voluntary feed intake, ADG and feed efficiency. Performance correlated negatively with fibre content in diets, and was reduced when canola meal replaced 75% or more soybean meal.

Canola's meal's high fibre content hinders performance in weaned pigs.

Introduction

The lower nutritional value of canola meal compared to soybean meal may be related to high fibre content. Fibre limits digestibility and availability of nutrients, and negatively affects use of canola meal in the pork industry. An accurate assessment of nutritional value may lead to better use of canola meal and reduced nutrient wastes to environment.

Experimental Procedures

Diets with 0, 4, 8, 12, or 16% canola meal were fed to five-week-old weaned pigs for three weeks to determine effects on performance. Canola meal replaced 0, 25, 50, 75, or 100% soybean meal on an equal weight basis. Diets were formulated to equal DE (Figure 1) and 3.15 g digestible

lysine/Mcal DE. Differences in digestible nutrient content were compensated for with purified energy and amino acid ingredients. feces were collected to measure actual DE content. Fibre and glucosinolate contents in feed were determined. Regression analysis determined relationships between fibre content in feed and pig performance.

Results and Discussion

Diets ranged from 4.3 to 6.3% in ADF and 11.5 to 15.2% in NDF from low to high canola meal diets. Dietary glucosinolates were below detection limits, but ~0.2 mmoles/g of 3-butenyl or 2-OH-butenyl glucosinolates were measured in 12 and 16% canola meal diets. The measured DE content of diets differed ($P < 0.05$), and was highest for the 16% canola meal diet. From low to high canola meal diets, voluntary feed intake reduced from 0.92 to 0.81 kg/d, ADG reduced from 0.56 to 0.46 kg/d (Figure 2), and feed efficiency reduced from 60 to 57%. For each per cent increase in canola meal in diet, ADFI, ADG, and feed efficiency decreased by 6.2 g/d, 5.5 g/d, and 2.5, respectively, even though DE was compensated for by addition of canola oil. Performance correlated negatively with fibre content in diets. Reduction in performance may be related to fibre but not glucosinolate content of canola meal.

Implications

Inclusion of canola meal increased fibre content of the diet and reduced performance of weaned pigs. Inclusion of more than 8% canola meal in weaned pig diets may not be economically beneficial to the pork industry, without additional processing to reduce negative effects of fibre content.

Acknowledgements

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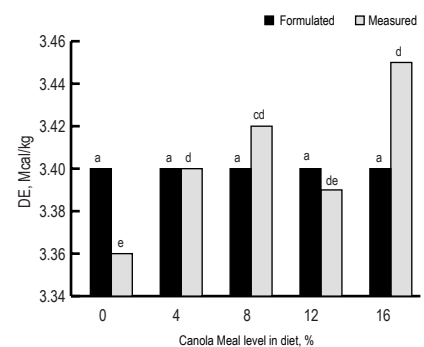


Figure 1 Formulated and measured DE content of diets fed to weaned pigs ($P < 0.05$).

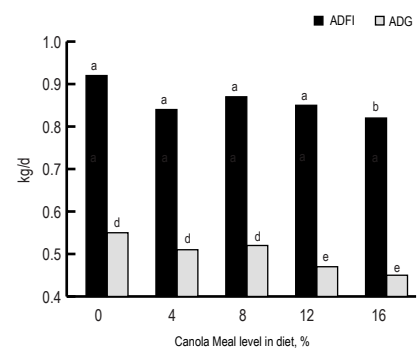


Figure 2 Relationship between canola meal level in diets and performance of weaned pigs ($P < 0.05$).

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