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Nutritional Evaluation of Cassava By-products and Shrimp Waste Meal in Diets for Growing Pigs

OLUFEMI S. AKINOLA¹, AMOS O. FANIMO¹, J. ADENIYI AGUNBIADE², ANDREAS SUSENBETH³,
EVA SCHLECHT⁴

¹University of Agriculture, Department of Animal Production and Health, Nigeria

²Olabisi Onabanjo University, Department of Animal Production, Nigeria

³University of Kiel, Institute of Animal Nutrition & Physiology, Germany

⁴University of Kassel / University of Göttingen, Animal Husbandry in the Tropics and Subtropics, Germany

Abstract

Sixteen Large White crossbred male pigs of 30–35 kg body weight were used to evaluate the digestibility of cassava by-products and shrimp waste meal as cheap alternatives to the increasingly extensive commercial feeding stuffs. Employing an incomplete-block-design at the Teaching and Research Farm, University of Agriculture, Abeokuta, Nigeria, two pigs per diet, housed individually in metabolic crates, were fed each one of the following eight experimental diets: Basal diet (BD), BD+cassava leaf meal with or without enzyme (CLM±E), BD+unfermented cassava peel with or without enzyme (UCP±E), BD+fermented cassava peel (FCP) and BD+shrimp waste meal with or without enzyme supplementation (SWM±E). The BD consisted of 79 % maize, 18 % soybean meal and 3 % vitamin-mineral premix. 300 g dry matted (DM) of each of the test ingredients SWM, CLM, FCP and UCP were added to 1000 g DM of BD; the enzyme Rovabio(R) was added to the diets at 100 mg kg⁻¹ DM. The feed was offered in wet mash form (water: feed=2:1) in two equal meals at 08:00h and 16:00h. Water was supplied ad libitum. Each of the three trial periods consisted of 14 days adaptation followed by 7 days of faeces and urine collection. Faeces and urine were collected twice daily and frozen. Dry matter (DMD) and energy digestibility (ED) for UCP±E and BD were higher ($p < 0.05$) than for CLM±E, FCP and SWM-E, among which there were no significant differences. Acid detergent fiber digestibility followed the trends of DMD and ED. However, neutral detergent fiber and crude fiber digestibility of UCP±E and BD were not different ($p > 0.05$) from those of SWM±E and CLM±E, but higher ($p < 0.05$) than those of FCP. Nitrogen retention (NR) for UCP-E and UCP+E (71.3 %, 71.6 %) was similar to that of BD (73.6 %). NR was higher for SWM-E and SWM+E (79.8 %, 82.1 %), CLM-E and CLM+E (79.2 %, 77.4 %), and lowest for FCP (69.2 %). Period of trial and enzyme supplementation did not significantly affect the results. It can be concluded that SWM, CLM and particularly UCP can be utilised effectively to reduce pig feeding costs.

Keywords: Fibrous diet, Nigeria, nitrogen retention, nutrient digestibility, pigs