

Nutritive value of rice polishing used in growing pigs feeding

Iliescu M.¹, Grossu D.¹, Iofciu A.², Diaconescu S.³

¹*Institute of Biology and Animal Nutrition, Balotești, 8113 Romania*

²*CAN 2000 Trading SRL, 4 Caineni Str. Bucharest*

³*University of Animal and Veterinary Science, 59 Marasti Blvd., 71331, Bucharest, Romania*

Abstract

The nutritive value of rice polishing was determined in an experiment on Large White × Landrace hybrid pigs weighing 23±0.1 kg in the beginning of the experiment, assigned to two groups. The experimental diets were formulated with corn, soybean meal and rice polishing (3% for E1 and 20% for E2).

The nutritive value was determined with the mathematical model for energy and protein metabolism simulation (Burlacu, 1990).

The nutritive value of rice polishing expressed as MJ/kg was 20.62 (GE), 12.94 ME_c, for a chemical composition expressed in MJ/kg DM of 156 CP, 139 EE, 84 CF and 554 NFE. Nutrient digestibility was 71% for OM, 73% for CP, 20% for EE, 45% for CF and 87% for NFE.

Keywords: *nutritive value, rice polishing, pigs*

Introduction

The identification of new energy and protein sources, other than the classical ones to be used in animal farm feeding is a research priority. The possibility of using rice waste obtained from rice dehulling and polishing in pig feeding was investigated.

Material and method

The nutritive value of rice polishing was determined by digestibility experiments on Large White × Landrace hybrid piglets with an initial weight of 23±0.1 kg, assigned to two randomized groups. The animals were housed in air conditioned rooms at neutral temperature, in individual digestibility cages.

The two groups received diets based on corn, soybean meal, with 3% rice polishing for E1 and 22% for E2.

The feeds, diets and excreta were analyzed chemically with the standard methods; the energy was analyzed with an adiabatic calorimeter, starch was determined with the polarimetric method and sugar with the method of Bertrand.

The nutritive value was determined with the mathematical model of energy and protein metabolism simulation (Burlacu et al., 1990); the corrected metabolisable energy (cME) was calculated with the formula of Whittemore (1983).

Results and discussion

The chemical composition of rice polishing expressed as g/kg DM was: 933 g organic matter, 156 g crude protein, 139 g ether extractives, 84 g crude fiber; gross energy was 20.62 kJ/kg DM. The results are lower than those obtained by Casting et al (1995) and similar to those of Burlacu et al (2000).

The coefficients of nutrient digestibility were 71% for the organic matter, 73% for the crude protein, 20% for the ether extractives, 45% for the crude fiber and 87% for the nitrogen free extractives. Under these circumstances, the digestible energy was 14.42 kJ/kg DM, which represents 70% of the gross energy. The corrected metabolisable energy was 12.94 kJ/kg DM and the digestible crude protein was 114 g/kg DM.

During the 27 experimental days, the piglets reached a final weight of 47 ± 0.2 kg, with an average weight gain of 874 g/day for E2 (20% rice polishing) and 830 g/day for E1 (3% rice polishing). The results are higher than those obtained by Casting (789 g average daily gain), but the difference is not statistically significant.

Feed conversion ration was 2.280 kg/kg for E1 and 2.331 for E2.

Conclusions

The nutritive value of rice polishing given to pigs weighing 24-47 kg was studied.

- The chemical composition expressed in g/DM was 156 CP, 139 EE, 84 CF, 554 NFE.

- The energy value expressed in kcal/kg DM was 4925 GE, 3400 DE and 3090 ME.

- The coefficients of nutrient digestibility were 71% for organic matter, 73% for crude protein, 20% for ether extractives, 45% for crude fiber, 87% for NFE; for energy the value was 70% (DE/GE).

- pig performance obtained from a diet based on corn, soybean meal, meat meal, fish meal and 20% rice polishing was 874 g/pig/day and 2.28 kg/kg feed conversion ration; for the diet with just 3% rice polishing the corresponding values were 830 g/pig/day gain and 2.331 kg/kg feed conversion ratio.

Under these conditions we may say that rice polishing is an alternative source of energy for pigs, replacing the dietary corn.

References

Burlacu Gh, Burlacu R. - 1990, Contribuții la studiul metabolismului energetic și proteic prin metoda modelării matematice la animalele monogastrice, Analele IBNA, vol.15, 21-25

Burlacu Gh, Burlacu R., Cavache A., Surdu I. - 2000, Indicators of the new system of assessment of the nutritive value of forages, calculation of the food allowances and diet optimization for farm animals, ed MAA, ISBN 973 8036 003

Casting J., Albar J., Serin J. F. - 1995, Valorisation par le porc charcutier de co-produits d'industries agro-alimentaire du sud de France: farine de maillerie, remoulage demi-blanc, farine basse de riz J. Rech. Porcine en France, 27, 223-230

Whittemore C. T. - 1983, Animal production response prediction, Agric. Syst., 11, 159.