

2nd International Conference on

Livestock Nutrition

July 21-22, 2016 Brisbane, Australia



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Replacement value of raw soybean meal for commercial soybean meal in diets for broiler chickens

Soybean meal (SBM) is the premier vegetable protein source for poultry. It is typically heat-treated prior to feeding to improve its quality. In a series of studies, we investigated the potential of replacing commercial SBM (at up to 30 %) with raw meal (RSBM, about 13498 TIU/g) in diets that were further supplemented with a novel protease and phytase. Both enzymes improved the digestion, *in vitro*, of RSBM. The RSBM over a short feeding period (14 days) reduced feed intake (FI) and body weight gain (BWG) and this response was worse on steam-pelleted diets. In a longer feeding trial, increasing the level of RSBM reduced BWG in early life but not over 1-35 days. Extra-dosing with microbial protease improved the FI and BWG of birds during the early period (1-10 days period) but only marginally over 1-35 days. In another experiment, increasing the inclusion rate of RSBM in the diets significantly increased ($p < 0.001$) the loss of undigested and unabsorbed ileal CP, leading to a reduction in both apparent ileal digestibility and standardized ileal digestibility of CP and most amino acids. There were no major effects of RSBM on intestinal lesions, footpad dermatitis, tibia bone quality or mortality of the birds when the material replaced 25% of SBM. Protease supplementation improved these variables. Litter N contents increased with increase in dietary RSBM level but were slightly reduced with protease supplementation. Other mechanisms assessed in the studies, including visceral organ weight; intestinal mucosal morphometry and digestive enzyme activities, responded in various ways to RSBM and the test protease. Overall, it can be concluded that RSBM can replace commercial SBM at up to 25%, if supplemented with the test protease and/or phytase, without compromising productivity or health of broiler chickens.

Biography

Paul A Iji is a Professor of Animal Science at the University of New England (UNE), Australia. He has studied in Nigeria, Scotland and Australia and has previously worked in similar positions in Nigeria and South Africa before taking up his current position at the University of New England, Australia. His main area of research is poultry nutrition with specialization in gastrointestinal physiology. He has supervised and currently supervising several postgraduate students and has published over 200 in peer-reviewed journals and conference proceedings.

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