

Enzymatic hydrolysis drastically reduces fibre content of palm-kernel expeller, but without enhancing performance in broiler chickens

ABSTRACT

The effectiveness of enzymatic hydrolysis of palm-kernel expeller (PKE) is dependent on various factors that influence the stability and functionality of the enzymes. In the present study, parameters influencing the enzymatic treatment of PKE were optimised employing response surface methodology. In addition, the effectiveness of enzymatic hydrolysed PKE in increasing inclusion rates in broiler diets was evaluated. Results showed that temperature, enzyme concentration and duration of hydrolysis had significant ($P < 0.01$) effects on the enzymatic hydrolysis of PKE. Using the crude enzyme produced by *Aspergillus terreus* K1 isolated in our laboratory, maximum reduction of crude fibre (40%) was achieved by fermenting the PKE at 60% initial moisture with 9.0 U/g PKE mannanase at 51°C for 18 h, with the production of 9.9% (w/w) of monosaccharides and oligosaccharides. Results of the growth-performance study indicated that inclusion rate of PKE with or without enzyme treatment in broiler diet is 5% for starter period and 20% for the finisher diet, without any detrimental effect on animal performance. Although the inclusion rate of enzyme-treated PKE can be increased to 30% without affecting average daily gain, feed conversion ratio of the birds will be compromised.