Dietary effects of optizyme P5® on the growth performance of day-old *Struthio camelus* var. *domesticus* (Ostrich) chicks

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Abstract

The effect of Optizyme P5 inclusion in ostrich chick starter diets on the growth performance of day-old ostrich chicks was investigated. Seven hundred day-old ostrich chicks with mean weight of 0.82 ± 0.11 kg were used. The chicks were split into two groups. Group one was on the control ostrich chick starter diet (D1) while group two had the exogenous enzyme complex included at a rate of 0.1 % (in its diet (D2)). Each treatment was replicated 7 times. Each replicate of 50 chicks constituted an experimental unit. Pens were used as a blocking factor in a Randomised Complete Block Design. Chick growth performance was monitored for 49 days. Dietary fortification with the exogenous enzyme did not affect ($p > 0.05$) live weight gain and average daily gain of the ostrich chicks (6.45 0.45 kg and 131.7 9.20 g/Day and 6.28 0.60 kg and 128.20 12.50 g/Day for chicks on D1 and D2 respectively). Birds offered exogenous enzyme fortified diet consumed significantly less ($p<0.001$) feed with a mean Dry Matter Intake (DMI) of 9.52 0.99 kg versus the 10.86 0.90 kg for those on the control diet. Efficiency of feed utilization was significantly high ($P<0.001$) for birds on diet D2 with a feed conversion ratio (FCR) of 1.52 0.1 versus an FCR of 1.68 0.11 for birds on the control diet. Dietary fortification of ostrich chick starter diet with Optizyme P5 improved feed utilisation efficiency.

Key words: Enzyme supplementation, growth performance and non-starch polysaccharides

Introduction

The ostrich, *Struthio camelus* var. *domesticus*, is the largest bird on the face of the earth (Cooper and Horbanczuk, 2004). It is found in the order Ratite, flightless and running birds, that also includes emu, cassowary, rhea and kiwi (Sibley and Ahlquist, 1990; Cooper and Horbanczuk, 2004). According to Cooper and Horbanczuk, (2004) the natural habitat of ostriches ranges from arid to semi-arid terrain to grasslands. Commercial ostrich production started in South Africa some 150 to 155 years ago (Hallam, 1992). In the Southern African Development Community (SADC) region, commercial ostrich farming is currently practised in South Africa and Zimbabwe (Cooper and Horbanczuk, 2004). The practice of ostrich farming has now spread to the United States of America and Israel (Cooper and Horbanczuk, 2004).

Despite their similarities with other birds, ostriches and all ratites have evolved special adaptations to survive in their natural environment. Of major interest and from a nutritional point of view are modifications to the gastrointestinal tract and the functional abilities these endow on the ratites (Angel, 1996). Ostriches as well as other ratites do not have teeth neither do they possess a crop.

The ostrich being a monogastric herbivore is a simple-stomached animal that has developed the ability to utilize forage (Smith and Sales, 1995). While all ratites are post-gastric fermenters, the fermentation sites differ within the ratite family. In ostriches, fibre fermentation occurs in the colon, yet in the emu, the distal ileum is the fermentation site. In the rhea, fermentation occurs in the enlarged caecum (Cooper and Horbanczuk, 2004). Ostriches and rheas are adaptable grazers/browsers (Sauer and Sauer, 1966; Cajal 1988). Being natural plant eaters, ostriches thrive on succulents, seeds, berries, grasses as well as tree leaves and shrubs. Williams *et al.* (1993) report that the weighted chemical composition of plants selected by free ranging ostriches in the Namib desert comprised of 11.2 % protein, 4.2 % lipid, 35.2 % fibre and 8.87 MJ/Kg metabolisable energy (ME). Milton *et al.* (1994) noted that in the wild, ostriches rarely eat dead grass and pointed out that an ostrich would require 5 6 Kg of fresh material in a day in their natural habitat.