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Effects of dietary phytase above the industry standards on the water intake pattern of broiler chicken

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Supplementation of poultry diets with microbial phytase has found to offer many advantages. Objective of this study was to determine the effect of dietary phytase above the industry standards on the water intake pattern of broiler chicken. Twenty-one-days old broiler chicks (n=72) in 24 cages received one of the four experimental diets *ad libitum* until day 38. Experimental diets contained 0, 750, 1500 or 2250 FTU of phytase/kg of diet. Daily water and feed intakes were measured from day 21-38. Water intake was corrected for evaporation losses. Water intake of the broilers given phytase free diet increased linearly ($WI=149 + 11 \times \text{day}$; $R^2=86$; $P<0.001$) from day 1-18 of the feeding trial. Water intake pattern of phytase given birds could best be described by a significant ($P<0.01$; $R^2=44$) cubic model. When computed as ml/ 100 g of live weight (LW) or as ml/g $LW^{0.75}$, WI reduced in all four treatments, as birds grew. Over the 18 days of feeding period, birds given 2250 units of dietary phytase maintained a significantly ($P<0.001$) higher water intake than the birds fed other phytase levels. The WI of the birds given 0, 750 and 1500 units of phytase were significantly different from each other only until day 28, but not thereafter. When WI expressed as ml/100 g LW or as ml/g $LW^{0.75}$, a similar pattern was seen until day 34. After day 34, 2250 units of dietary phytase tend to increase the WI/100 g LW ($p=0.06$) and WI/ g $LW^{0.75}$ ($p=0.09$). During first seven days, water: feed ratio of the birds given 0, 750, 1500 and 2250 units of dietary phytase were 2.2, 2.8, 3.4 and 3.6, respectively and were significantly ($p<0.001$) different from each other. There was no significant effect of phytase levels on water: feed after day 34. It was concluded that the supplementation of the broiler diets with microbial phytase above industry average increased the water intake.

Keywords: broiler, phytase water intake