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Efficacy of high levels of microbial phytase in improving phytate Phosphorus utilization by turkeys

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A 14-day study was conducted with 750 female turkey poults to determine the efficacy of high levels of phytase in improving turkey performance and percent and milligram toe ash. Six dietary treatments were assigned to five replicate pens of 25 poults each. A National Research Council (NRC) corn-soybean meal diet, adequate in all nutrients, was fed to all birds for the first week. Dietary treatments fed from 8 to 21 days of age included: 1) a positive control NRC diet (0.6% non-phytate phosphorus [npP] and 1.2% Ca); 2) a low P negative control basal diet (B) (0.36% npP and 1.01% Ca); 3) B + 250 U/kg phytase; 4) B + 500 U/kg phytase; 5) B + 10,000 U/kg phytase; and 6) B + 20,000 U/kg phytase. Feed intake and body weight gain were significantly higher ($P < .05$) in birds fed high phytase diets (diets 5 and 6) compared with those fed the NRC, basal, or low phytase diets (diets 1, 2, 3 and 4). Feed conversion was also found to be lowest (most efficient; $P < .05$) for the birds fed high phytase diets compared to the birds fed the other diets. Percent toe ash for the three highest phytase diets (4, 5 and 6) was similar ($P > .05$) to the NRC positive control diet but significantly higher ($P < .05$) than the negative control birds (diet 2). Milligrams of toe ash was also significantly higher ($P < .05$) for the birds fed the highest two levels of phytase compared to the birds fed the other diets. Feeding high levels of phytase (≥10,000 U/kg) to turkeys was effective in increasing phytate phosphorus utilization and in improving growth performance above the birds fed the NRC control diet.