

Mannan oligosachcharides and turmeric (*Curcuma longa*) root powder as alternatives to antibiotics in broiler feeds

An experiment was carried out with nineteen days old broiler chicks (180) to investigate whether mannan oligosachcharides (MOS) and turmeric root powder could replace verginiamycin in broiler feeds. A basal feed without additives was formulated to contain all the nutrients required by growing broilers. Five test feeds were produced by supplementing the basal feed with verginiamycin, MOS (200 ppm), and turmeric root powder at 3 inclusion levels (1, 2 and 3 g/kg). Unsexed broiler chicks (Arbor acres), which were commonly fed on the basal feed during brooding (19 days), were divided into 18 groups of 10 chicks and housed in wire meshed battery cages. They were assigned to 6 dietary treatments with 3 replications and fed ad libitum. Weekly group body weight and feed intake were recorded for 5 weeks. Excreta were collected during 2 collection periods to estimate energy and protein utilization using indicator method. At the termination of the trial, 3 birds from each group were slaughtered to study carcass recovery and body fat deposition. Feed intake of broilers was not affected by the dietary treatments. Average growth rate was not significantly affected but there was a slight improvement by the addition of verginiamycin (54.2 g/day), MOS (54.9 g/day) and low level of turmeric (53.1 g/day) as compared to the basal diet (51.5 g/day). However, this effect could not be seen with the higher levels of turmeric (2 and 3 g/kg). Turmeric at higher levels could have been reduced nutrient utilization thus lowering the growth rate. As a result of improved growth, feed conversion efficiency was also improved (not significant) with all three additives.

All additives increased the energy metabolisability by 12 - 15%. Verginiamycin, MOS and turmeric increased the net protein utilization by 25.5, 30.7 and 25.8%, respectively. Turmeric at high concentrations (2 and 3 g/kg) reduced both protein and energy utilization explaining the lower growth rate observed with high turmeric diets. Carcass recovery was improved by all three additives. Abdominal fat deposition was markedly reduced with MOS (49 %) and turmeric (26 - 48 %). Verginiamycin reduced the fat deposition by 25 %. Results show that higher final body weight of broilers observed with additives was due to higher protein turn over in the body. It is concluded that mannan oligosachcharides and turmeric root powder can be used to replace traditional antibiotics in broiler feeds with a better carcass quality.