

Performance, Safety and Tissue Residue Study for Coated Sodium Butyrate Added to Broiler Feed

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Abstract: The aim of this study was to evaluate whether administration of feed containing 0.1, 0.5 or 1.0% fat-coated sodium butyrate (coated sodium butyrate) to one-day old broiler chicks for 49 consecutive days caused toxicity to the animals, or altered the fatty acid profile or butyric acid metabolite concentrations (β -hydroxybutyrate, acetoacetate and acetone) of ingestible tissues compared to control animals. Treatment groups that consumed coated sodium butyrate exhibited low mortality and good general health. No statistical differences were found between groups for performance parameters, with the exception of the feed: gain ratio in the period D0-021, which was improved by coated sodium butyrate at the 1.0% concentration. There was no effect of coated sodium butyrate on hematology, clinical chemistry, organ weight or organ histology of broiler chickens. The fatty acid profile of breast, liver, kidney or subcutaneous fat (with skin) tissues from chickens fed diets containing coated sodium butyrate did not differ from control chickens, with the exception of a statistically significant decrease in palmitoleic acid (C16:1) in liver tissue in the 0.5% and 1.0% groups. Small, dose-dependent, toxicologically insignificant increases in tissue levels of butyric acid and its metabolites occurred in edible tissues, which were expected based on the dose-dependent absorption of butyric acid into plasma. The results show that coated sodium butyrate may be safely used in poultry feed at up to 10,000 g/tonne feed (1.0%), from the day of hatching to 49 days of age

Key words: Broiler, chicken, sodium butyrate, toxicity, residue