

The effects of a phytogenic feed additive versus and antibiotic feed additive on oxidative stress in broiler chicks

Tabatha Lynn Settle¹, Joseph Moritz¹, Stephen Leonard², Hillar Klandorf¹, Elizabeth Falkenstein¹ and Maria Caro¹

[+](#) Author Affiliations

Abstract

Phytogenic feed additives are plant-derived products used in poultry feeding to improve overall performance of broilers while reducing oxidative stress. In the first study 588 one day-old Cobb 500 chicks of mixed sex were fed one of four diets and housed on either dirty or clean litter for 3wks. Blood samples were obtained from chicks at 18 days of age for measurement of leukocyte oxidative activity. Results of the study showed that chicks in the treatment groups fed either the phytogenic additive or the antibiotic had lower levels of oxidative stress ($P < 0.02$). In a second study electron spin resonance (ESR) spin trapping was used to measure feed additive of hydroxyl or superoxide radicals. Fenton chemistry was utilized in generation of hydroxyl radicals and a xanthine/xanthine oxidase reaction generated superoxide radicals. Radicals were also measured after stimulation of RAW 264.7 mouse peritoneal monocytes. Treatments were based on different concentrations and age of the antibiotic or phytogenic feed additive. Results from both studies showed that both the antibiotic and the phytogenic feed additive scavenged hydroxyl and superoxide radicals although the antibiotic was determined to be more efficient.