

COMPARATIVE EFFECTS OF DIETARY PHYTOBIOTIC (*MACLEAYA CORDATA* ALKALOID EXTRACT) AND PROBIOTIC (*PEDIOCOCCUS ACIDILACTICI* MA 18/5 M) PREPARATIONS AS SINGLE SUPPLEMENTS OR IN COMBINATION ON FERMENTATIVE PROCESSES IN THE BROILER CHICKENS CAECA

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Abstract. The aim of this 5-wk study was to characterize the physiological effects in the caeca of broilers fed diets containing two types of feed additives, as single supplements or in combination; an alkaloid preparation obtained from *Macleaya cordata* (Sangrovit, containing mainly sanguinarine, 30 mg/kg) and a probiotic one (Bactocell, containing *Pediococcus acidilactici* MA 18/5 M, 1×10^6 CFU/g) were investigated. Caecal weight, pH of digesta, ammonia concentration as well as bacterial enzymes activity and short-chain fatty acids (SCFAs) concentration were assessed. Generally, the dietary treatments (n=10 birds, each) did not affect the caeca size, pH and ammonia concentration in the digesta. The enzymatic glycolytic activity of caecal microbiota was significantly increased in birds fed a diet containing probiotic ($P < 0.05$ v. remaining groups in cases of β -galactosidase and β -glucosidase). The lowest glycolytic activity, proving antimicrobial properties, was found in chickens given the alkaloid preparation. As compared to the control unsupplemented diet, all preparations used in this study effectively reduced the activity of bacterial β -glucuronidase ($P < 0.05$). The lowest concentration of total SCFAs was noted upon single Sangrovit treatment, and the highest one followed dietary combination of both preparations. In the latter case, the caecal concentration of butyric acid was markedly increased as compared to other groups. To sum up, it seems that the applied dietary combination of phytobiotic and probiotic preparations enables taking advantage of the physiological traits of both components (lower β -glucuronidase activity and higher, especially butyrate, SCFAs concentration in the broilers' caeca).

Keywords: broiler, caeca, bacterial enzyme activity, SCFAs, probiotic, sanguinarine.