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IN VIVO EVALUATION OF A MIXED CULTURE AS PROTECTOR OF THE INTESTINAL EPITHELIUM OF BB CHICKS AGAINST THE NEGATIVE EFFECTS OF SOYBEAN AGGLUTININ (SBA)

EVALUACIÓN *IN VIVO* DE UN CULTIVO MIXTO COMO PROTECTOR DEL EPITELIO INTESTINAL DE POLLITOS BB CONTRA LOS EFECTOS NEGATIVOS DE LA AGLUTININA DE SOJA (SBA)

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Lectins, glycoproteins with high resistance to heat, proteolysis and pH, are among the components of the ingredients used for the elaboration of broilers feed. These proteins can specifically and reversibly bind to carbohydrates. Once ingested, they interact with superficial carbohydrates expressed on the surface of intestinal epithelial cells affecting epithelial development and digestive enzyme activities, thus delaying the bird growth. SBA lectin is a secondary metabolite of soybean and specifically binds to N-acetyl-galactosamine and/or galactose. *In vitro* capture of SBA by *Bifidobacterium infantis* CRL1395 was previously reported. Thus, the aim of this study was to evaluate the effect of the administration to BB chicks, fed with a diet supplemented with SBA, of a mixed culture constituted by 5 strains (*B. infantis* CRL1395, *Enterococcus faecium* LET 301, *Lactobacillus salivarius* LET 201, *L. reuteri* LET 210 and *Propionibacterium acidipropionici* LET 103) capable of binding different lectins (SBA, Con A and WGA). Towards this end, a combination of the 5 strains was incorporated into the drinking water (10^6-10^7 CFU/mL, each strain) and daily administered for 13 days to one-day-old BB chicks (group TS, n = 20). A control group (CS, n = 20) including BB chicks fed the same diet but without the bacterial mixture in the drinking water, was also evaluated. All birds were fed a diet supplemented with previously purified SBA to reach approximately 217-354 µg SBA/g of feed. Urea and creatinine in chick´s blood plasma, liver weight/body weight and spleen weight/body weight ratios, bacterial translocation to these organs, and the activity of several digestive enzymes were evaluated at days 6 and 13; jejunal mucosa integrity was studied at day 6. Concerning urea and creatinine in blood plasma, organs/body weight ratios and bacterial translocation to liver and spleen, there were no differences between animals of both groups. All chicks showed alterations in jejunal mucosa, nevertheless birds of group TS had higher overall integrity, showing less immune cells infiltration in lamina propria and no increase in cellularity of the epithelium covering the villi. In concordance to this, mucosa of animals from group TS evidenced significantly higher activities of alkaline phosphatase and leucineaminopeptidase than those of group CS. In conclusion, the administration of the mixed culture prevents some negative effects associated to SBA. Nevertheless, the results of this study indicate that greater protection could be reached through the administration of a higher dose of bifidobacteria in the probiotic mixture.