Evaluation of the Efficacy of *Saccharomyces cerevisiae boulardii* on Performance, Intestinal Microbiota , GUT integrItY and Gut MORPHOLOGY of Broiler Chickens in Challenging Conditions

Awaad, M. H. H1., S. M. M. Shalash2, A. Atta3, H. B. Gharib3, M. A. Elmenawey3, M. A. Ali1, S. A. Zouelfekar1, F. A. Fathy1 , M. Elhariry1 , A. Samir1 and V. Demey4

1Faculty of Veterinary Medicine, Cairo University

2Animal Production Research Institute, Ministry of Agriculture Egypt

3Faculty of Agriculture, Cairo University

4Lallemand SAS

The objective of this trial was to determine the effect of *Saccharomyces cerevisiae* *boulardii CNCM I-1079* (*SCB*) on performance, gut integrity, gut morphology and gut microbiota in broilers submitted to stress (increased density). Day-old male chicks (n=460) were divided in 4 groups (10 replicates each) according to 2x2 factorial design (stocking density X SCB supplementation). Performance parameters were measured weekly. Microflora (gut and feces) were sampled at day 14, 28, 35 and 42. Two immune-assays were performed: 1) antibody titers against Newcastle disease (ND) at day 14, 28 and 42; 2) challenge test with velogenic viscerotropic Newcastle disease (vVND) virus at 42 days. Gut morphology was determined at the end. Significant negative effect of increased density on body weight and feed intake was recorded (P<0.05). Challenged SCB treatment showed significant higher body weight than the Challenged Control. SCB supplementation significantly increased the weight percentage of the immune organs Thymus and Bursa of Fabricius (P<0.05). A significant increase in total lactic acid bacteria (P ≤ 0.05) in SCB group vs. Controls was recorded. Lesion scores for animals challenged with vVND were significant lower in SCB group vs the Controls 7 days post-infection (P ≤ 0.05). Higher density resulted in a tendency for higher lesions scores (P<0.10). Supplementation with SCB significantly improved villi height and villus height/crypt depth ratio vs Control group (P ≤ 0.05). Stocking density degraded (P<0.01) these histomorphological parameters. Supplementing broilers with SCB helps birds to better cope with challenges by improving gut morphology and stimulating immune organs activity.