

Effect of Feeding Different Forms of Diet Containing Oyster Mushroom (*Pleurotus ostreatus*) on Ileum Microbiota of Egg-type Chickens

ALAUSA, O.J.¹, ALABI, S.J.², OJO, R.O.³, ADEDEJI, A.S.⁴

Department of Animal Production and Health, Federal University of Agriculture, Abeokuta

Department of Animal Health and Production, Federal Polytechnic, Ilaro

Department of Animal Health and Production, Federal Polytechnic, Ilaro

Department of Animal Production and Health, Federal University of Agriculture, Abeokuta

Corresponding author: Oluwadamilare.alausa@federalpolyilaro.edu.ng/ 08145920393

Introduction

Animal performance may suffer as a result of intestinal integrity being compromised by dangerous microorganisms, which antibiotics are used to control. However, because to worries that residues in animal products could endanger human health by potentially causing bacterial resistance, the European Union placed a ban on the use of antibiotics in the production of livestock in 2005 (Santos and Turnes, 2006). Since then, a number of natural antibacterial substitutes have been studied and evaluated. Probiotics and prebiotics may improve the intestinal microbiota, maintain intestinal integrity, and eventually improve poultry performance (Silva and Nörnberg 2003; Santos and Turnes 2005). The oyster mushroom (*Pleurotus ostreatus*) is recognized for its antioxidant and immunomodulatory properties and has demonstrated benefits for intestinal health. However, there is limited information available on the ileum microbiota of egg-type chickens. Therefore, this study aims to explore the impact of oyster mushroom (*Pleurotus ostreatus*) on the ileum microbiota in egg-type chickens.

Methodology

A total of 320 fourteen-week-old pullets were allocated into four treatments, with 80 birds per treatment. Each treatment was further divided into 10 replicates, each containing 8 birds, housed in pens at the Poultry Unit of the Directorate of University Farms (DUFARMS), Federal University of Agriculture, Abeokuta, Ogun State, Nigeria. The study followed a 2 × 2 factorial design in a Completely Randomized Design, incorporating two feed forms (mash and pellets) and two inclusion levels of oyster mushroom (0 or 1 g/kg). Two birds from each replicate were randomly selected, fasted for 12 hours, and then euthanized to assess the ileum microbiota of the pullets at 16 weeks of age.

Results and discussion

The main effects of feed form and oyster mushroom inclusion on the total bacterial count in pullets at 16 weeks revealed no significant differences ($p > 0.05$). Both the mash and pelletized meal contained every known species of bacteria. In a similar vein, the diet containing 1 g/kg of oyster mushroom and the control diet both included all bacterial species. Additionally, the pullets' overall bacterial count did not change significantly ($p > 0.05$) as a result of the interaction between feed types and the addition of oyster mushrooms at week 16.

The inclusion of oyster mushroom may have facilitated the rapid colonization of microbial populations in the gut, potentially boosting the microbial production of VFAs and polyamines, which in turn may have led to an increase in intestinal weight at earlier stages, as observed in the current study. In the gut of chickens, research has shown that the microbial population can enhance the production of polyamines and volatile fatty acids (VFAs), both of which bind to absorption sites in the small intestine and contribute to the weight of the small intestine.

Conclusions

The study concluded that feeding layers with oyster mushroom diet did not significantly influence the ileum microbiota. Further research on utilizing higher inclusion levels of oyster mushroom should be conducted.

Keywords

Microbiota, Oyster mushroom, ileum, and morphology.