THE NUTRITIVE EFFECT OF SOME FUNGAL POLYSACCHARIDES USED ON BROILER FEEDING

EFECTUL NUTRITIV AL UNOR POLIZAHARIDE FUNGICE UTILIZATE ÎN ALIMENTAȚIA BROILERILOR

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In this study we determined the immunostimulant effect of an alcoholic total extract from Pleurotus ostreatus administered in 5 and 15% concentration to broiler chickens vaccinated against infectious bursal disease. The immunogen was represented by two vaccines (Biavac and Biaromvac) used in infectious bursal disease prophylaxis. Vaccination was made at the age of seven days in four groups of broilers. Laboratory tests results showed that fungal extract have a stimulant action upon average daily gain, the most conclusive results being registered in group treated with 15% Pleurotus extract.

Keywords: broilers chickens, fungal polysaccharides, body weight.

Introduction

The Egyptians believed that mushroom were a sacred food that prolonged life. A mummified 5000 years old “Ice-man” found in the mountains of Europe carried a medicine kit of dried mushrooms. Indeed the oldest written record of mushrooms as medicine is in Indian medical treatise from 3000BC (1, 3, 6, 7, 9 and 11).

Medicinal fungi research has focused on discovery of compounds that can influence positively and negatively biologic response of main organism systems, respectively central nervous system, immune system, and digestive system (2, 3, 4, 5, and 8). Waser (12, 13, and 14) reported that fungal polysaccharides are important modifiers of biologic response (BRM).

Pleurotus ostreatus contains mevilonine and other related compounds that are competitive inhibitors for 3-hydroxy 3-methyl glutaryl coenzyme A (HMGCoA) reductase, with major limitation of this enzyme which is responsible in cholesterol synthesis. Pleurotus ostreatus diet prevents effectively increases in cholesterol level and his deposition in liver. Also, Pleurotus ostreatus have anti-tumor, anti-inflammatory, and antibiotic activity.
Materials and Methods

The research was conducted on one-day old 60 broilers, divided in five groups of 10 individuals: experimental group 1 (E\textsubscript{1} – Biavac + 5\% *Pleurotus ostreatus* extract), experimental group 2 (E\textsubscript{2} – Biavac + 15\% *Pleurotus ostreatus* extract), experimental group 3 (E\textsubscript{3} – Biaromvac + 5\% *Pleurotus ostreatus* extract), experimental group 4 (E\textsubscript{4} – Biaromvac + 15\% *Pleurotus ostreatus* extract), control group 1 (C\textsubscript{1} – vaccinated with Biavac) and control group 2 (C\textsubscript{2} – vaccinated with Biaromvac). Research period was 35 days.

All individuals were fed with standard combined diet (145kg) containing corn, wheat, soybean meal, calcium phosphate, calcium carbonate, vitamin-mineral premix, salt and analytical compounds: raw protein (min. 21.57\%), raw fat (min. 4.81\%), raw cellulose (max. 3.35\%), raw ash (max. 2.60\%), methionine (0.58\%).

Both BIAVAC and BIAROMVAC used in infectious bursal disease prophylaxis were administered in seven days old individuals.

*Pleurotus ostreatus* is a comestible fungus that is popular named trout, beech trout, black sponge or sky trout. It breaks down lignin and other lignin-cellulose culls, having a complex enzymatic system with three exoenzymes, the most studied being lignin-peroxidases, Mn-peroxidases and laccases.

Fungal polysaccharides are base for all major organism systems with regulation function, including central nervous system, endocrine and immune system.

In our research we used a *Pleurotus ostreatus* alcoholic extract in 5 and 15\% concentration, according to experimental protocol.

Broilers body weight was established by weekly weighing with a balance. The obtained data were processed statistically using ANOVA test.

Results and Discussion

*Pleurotus ostreatus* total alcoholic extract influence upon the main technico-economic parameters in broilers breeding is presented in figures 1, 2, 3 and 4. Interrelations between fungal extract and average daily gain of broilers were extremely interesting.
Experimental group data showed a higher daily gain in case of fungal extract administration compared to control group. Thus, average daily gain was 52.8 g/day in the individuals of control group and between 53.7 and 60.0 g/day in experimental groups broilers (vaccinated and feed with fungal extract) – figures 1, 2, 3 and 4.

The highest values of weight were registered in experimental group E4 (Biaromvac + 15% Pleurotus extract), while C, E1, E2 and E3 have variability two and half fold higher.
Fig.3. Average gain in E₃ group (Biaromvac + 5% *Pleurotus ostreatus* extract)

Fig.4. Average gain in E₄ group (Biaromvac + 15% *Pleurotus ostreatus* extract)

**Conclusions**

Monitored parameters revealed relevant values, the obtained results being centralized and systematized in tables.

The highest values of weight were registered in experimental group E₄ (Biaromvac + 15% *Pleurotus ostreatus* extract), while C, E₁, E₂ and E₃ have variability two and half fold higher.

The obtained results prove positive effect of *Pleurotus ostreatus* extract on average daily gain, this being between 53 and 60g per day.

The individual benefits are associated with protection against infections, clinical manifested diseases, possible complications of some infectious diseases, and even with prevention of death.
References


