

Immunoprotective Role of Baker's Yeast (*Saccharomyces cerevisiae*) against Experimentally Induced Aflatoxicosis in Broiler Chicks

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Abstract : Aflatoxins are secondary metabolites produced by toxigenic fungi, and there are four types of aflatoxins include AFB1, AFB2, AFG1 and AFG2. Aflatoxin B1 (AFB1) is considered as most toxic form. It is mainly responsible for the contamination of poultry feed and produces a condition called aflatoxicosis leads to immunosuppression in poultry birds. *Saccharomyces cerevisiae* is a single cell microorganism and acts as a source of growth factors, minerals and amino acids which improve the immunity and digestibility in poultry birds as probiotics. *Saccharomyces cerevisiae* is well recognized to cause the biological degradation of mycotoxins (toxin binder) because its cell wall contains β -glucans and mannans which specifically bind with aflatoxins and reduce their absorption or transfer them to some non-toxic compounds. The present study was designed to investigate the immunosuppressive effects of aflatoxins in broiler chicks and the reduction of severity of these effects by the use of Baker's Yeast (*Saccharomyces cerevisiae*). One-day-old broiler chicks were procured from local hatchery and were divided into various groups (A-I). These groups were treated with different levels of AFB1 @ 400 $\mu\text{g/kg}$ and 600 $\mu\text{g/kg}$ along with different levels of Baker's Yeast (*Saccharomyces cerevisiae*) 0.1% and 0.5 % in the feed. The total duration of the experiment was six weeks and different immunological parameters including the cellular immune response by injecting PHA-P (Phytohemagglutinin-P) in the skin of the birds, phagocytic function of mononuclear cells by Carbon clearance assay from blood samples and humoral immune response against intravenously injected sheep RBCs from the serum samples were determined. The birds from each group were slaughtered at the end of the experiment to determine the presence of gross lesions in the immune organs and these tissues were fixed in 10% neutral buffered formalin for histological investigations. The results showed that AFB1 intoxicated groups had reduced body weight gain, feed intake, organs weight and immunological responses compared to the control and Baker's Yeast (*Saccharomyces cerevisiae*) treated groups. Different gross and histological degenerative changes were recorded in the immune organs of AFB1 intoxicated groups compared to control and Baker's Yeast (*Saccharomyces cerevisiae*) treated groups. The present study concluded that Baker's Yeast (*Saccharomyces cerevisiae*) addition in the feed helps to ameliorate the immunotoxigenic effects produced by AFB1 in broiler chicks.

Keywords : aflatoxins, body weight gain, feed intake, immunological response, toxigenic effect

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