Comparative efficacy of silymarin and choline chloride (liver tonics) in preventing the effects of aflatoxin B₁ in bovine calves

O. Naseer¹, J.A. Khan¹, M.S. Khan¹, M.O. Omer², G.A. Chishti¹, M.L. Sohail¹, M.U. Saleem³

¹ Department of Clinical Medicine and Surgery, Faculty of Veterinary Sciences, UVAS Lahore, Pakistan
² Department of Pharmacology and Toxicology, Faculty of Biosciences, UVAS Lahore, Pakistan
³ Department of Biosciences, Faculty of Veterinary Sciences, Bahauddin Zakariya University Multan, Pakistan

Abstract

Aflatoxins are secondary metabolites produced by Aspergillus spp. which are injurious to animals and humans. The aim of this study was to determine the effects of aflatoxin B₁ (AFB₁) on Average Daily Feed Intake (ADFI), Average Daily Weight Gain (ADWG), haematological and serum biochemical responses of Bovine Calves and to determine the comparative efficacy of two different liver tonics against AFB₁. Twenty seven calves were selected from herd and divided into 3 groups. All calves were fed with 1.0 mg/kg AFB₁ for a period of 10 days. After that they were fed with liver tonics: Silymarin fed at a rate of 600 mg/kg and Choline chloride 500 mg/kg for 7 days. The results indicate that the ADFI and ADWG of AFB₁ treated calves decreased significantly. Serum levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST), blood urea nitrogen (BUN) and creatinine significantly increased due to AFB₁. In haematology the total erythrocyte count (TEC), total leukocyte count (TLC), haemoglobin concentration (HGB), haematocrit levels (HCT), mean corpuscular haemoglobin (MCH), mean corpuscular volume (MCV) and mean corpuscular haemoglobin concentration (MCHC), lymphocyte %, neutrophil % and monocyte % significantly decreased in AFB₁ treated calves after 10 days of feeding. Both liver tonics significantly (p<0.05) improved all the parameters, including ADFI, ADWG, hematological and serum biochemical test. However, Silymarin comparatively more efficiently ameliorate the effects induced by AFB₁ than choline chloride.

Key words: silymarin, choline chloride, aflatoxin B₁, bovine calves

Correspondence to: O. Naseer, e-mail: dromersheikh@gmail.com, tel.: +92 321 640 89 56