

BIOCHEMICAL AND PATHOLOGICAL STUDIES ON EXPERIMENTAL MADURAMICIN TOXICITY IN CHICKENS

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ABSTRACT

Experimental studies were carried out in broiler chicken to know the biochemical and pathological changes after giving maduramicin medicated feed at 5 and 10 ppm for 21 days. Biochemical studies revealed increase in activities of aspartate transaminase and alanine transaminase in both the medicated groups but the increase was of higher magnitude in chicken given 10 ppm dose. There was significant increase in the activity of lactate dehydrogenase only in 10 ppm dose group from day 14 of the medication. Histopathological studies revealed necrotic enteritis, lymphocytic depletion in bursa of Fabricius, haemorrhages and myocarditis in heart and nephrosis from day 14 in both the medicated groups, though the lesions were more severe in chicken fed 10 ppm maduramicin. Maduramicin at the rate of 10 ppm also caused hepatitis, lymphocytic depletion in spleen, myositis, and haemorrhages in lungs from day 14. The lesions in both medicated groups are suggestive of immunosuppressive effect in the toxicated broiler chicken.

Key words: Chickens, clinical chemistry, pathology, maduramicin

Control of coccidiosis chiefly depends upon the prophylactic chemotherapy with anticoccidial drugs (McDougald and Reid, 1991). Polyether ionophore antibiotics viz. monensin, salinomycin and maduramicin are most widely used anticoccidial drugs in broiler industry throughout the world. Of these ionophore compounds, maduramicin, a product of *Actinomadura yumaensis* (Folz *et al.*, 1988) is comparatively a new anticoccidial drug which has been found to be effective at a dose rate of 5 ppm to prevent the infection of various species of *Eimeria* (Folz *et al.*, 1988, Logan *et al.*, 1993). The literature on maduramicin toxicity is scanty. No report could be traced on experimental maduramicin toxicity in poultry with respect to pathological changes. The present study, describes biochemical and pathological changes in maduramicin medicated broiler chicks to assess its toxicity.

MATERIALS AND METHODS

Chicks and feed: Thirty three, day-old broiler chicks (Ross strain) were procured from a

local hatchery. The chicks were reared in well-ventilated rooms under hygienic conditions. All the birds were given coccidiostat free standard chick feed and provided clean drinking water *ad libitum* throughout the experiment. Maduramicin was added in the feed of chicks on day 14 @ 5 and 10 ppm for testing its toxicity.

Experimental design: At day 14, the chicks were divided randomly into three groups viz. groups A, B and C having 11 birds in each. The birds of groups A and B were given maduramicin medicated feed @5 and 10 ppm, respectively for 21 days whereas the birds of group C were given non-medicated feed which served as control. Blood was collected aseptically from randomly selected five birds prior to the grouping on day 14 and subsequently from each group on days 7, 14 and 21 post-treatment in sterile tubes for serum separation and stored at -20°C.

Serum studies: Serum samples were analyzed for total proteins, albumin, aspartate transaminase (AST), alanine transaminase (ALT) and lactate dehydrogenase (LDH) using single step reagent kits (Trans Asia Bio

