Immunotherapeutic effects of some sugar cane (Saccharum officinarum L.) extracts against coccidiosis in industrial broiler chickens

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Abstract

Present paper reports the effects of aqueous and ethanolic extracts of sugar cane (Saccharum officinarum L.) juice and bagasse, respectively on protective immune responses in industrial broiler chickens against coccidiosis. Immunotherapeutic efficacies of the extracts were measured by evaluating their effect on body weight gain, oocyst shedding, lesion score, anti-coccidial indices, per cent protection and elicited serum antibody responses against coccidiosis. Results revealed a significantly lower ($P < 0.05$) oocyst shedding and mortality in chickens administered with sugar cane extracts as compared to control. Further, significantly higher ($P < 0.05$) body weight gains and antibody responses were detected in chickens administered with sugar cane extracts as compared to chickens of control group. Moreover, ethanolic extract showed higher anti-coccidial index (227.61) as compared to aqueous extract (192.32). The organ body weight ratio of the lymphoid organs of experimental and control groups were statistically non-significant ($P > 0.01$). These results demonstrated that both ethanolic and aqueous extracts of sugar cane possess immune enhancing properties and their administration in chickens augments the protective immunity against coccidiosis.

Graphical abstract

Highlights

• Oral administration of aqueous and ethanolic extracts of sugar cane enhances the natural immunity in chickens. • After artificial infection with Eimeria spp. (local isolates; E. tenella, E. acervulina, E. necatrix), less severe outcomes in chickens administered with sugar cane extracts. • Elicited humoral response against Eimeria spp. • Decreased oocysts per gram of droppings and higher weight gain in chickens. • Decreased mortality and lesion scoring.

Keywords

Saccharum officinarum, Chicken; Immunotherapeutic; Coccidiosis