cause for canine atopic dermatitis.

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Amprolium Resistant Eimeria spp. in Goats

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Abstract
Coccidiosis, the Eimeria spp infections, in goats is common and worldwide in distribution. Disease occurs in various age groups though most common during 2-6 months of age. Prevention of the disease mainly depends on maintenance of hygienic standards in farm premises. Treatment includes the use of Amprolium, Sulfonamides, Decoquinates, Toltazuril and Ionophores. Present study, however, describes the resistance against amprolium in Eimerian parasites in goats. A goat flock showing threshold level of Eimerian oocysts during random faecal examination was treated with Amprolium (50mg/kg B.W) for 7 days. Post treatment (7days) FOC of randomly selected animals from the flock were compared with pre-treatment (FOC) level. The analysis of transformed data (SAS, version 9.2) showed that FOC in pre and post treatment animal groups was not significantly different. It was concluded that Amprolium resistance exists among the Eimeria spp. infecting goats.

Keywords : Goats, Eimeria, Coccidia, Amprolium

Coccidiosis in goats is an important disease. Clinical signs in affected kids can include anorexia, dehydration, weakness, rough hair coat, emacination and death. Treatment of coccidiosis generally includes administration of amprolium, sulphonamides, triazine derivatives (such as toltrazuril), decoquinate and ionophores (such as monensin) (Chartier and Paraud, 2011). Amprolium is structurally related to thiamine, and the efficacy of amprolium in coccidiosis is based on competitive inhibition of thiamine uptake in isolated second generation schizonts of Eimeria spp. resulting in thiamine deficiency and starvation. Amprolium is a common coccidiostat being used in poultry, but it is not approved by FDA for use in goat. Use of amprolium for the treatment of Eimeria infections in goats is extra label (without advice/ prescriptions) in many countries and there are reports that prolonged use of amprolium, at high

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doses, induces cerebro-cortical necrosis in goats (Young et al. 2011). Also there are incidences showing lesser efficacy of amprolium against the poultry Eimeria species. In present study authors describe the observations recorded on using amprolium as an anti-coccidial drug among goats, maintained in semi-intensive system at organized goat farm.

Materials and Methods
The study was conducted at Central Institute for Research on Goats, Makhdoom, Mathura, Uttar Pradesh, India. A total of 25 goats showing recurrent clinical symptoms of diarrhea and suspected for coccidiosis were observed through faecal collection and microscopic examination for presence of Eimeria oocysts during routine faecal examination. The samples collected per rectally and separately in clean, sterile plastic bags or vials were found positive for coccidian oocysts. The goats were picked up and maintained separately. Quantitative determinations (OPG), pre-treatment, were made by using the modified McMaster technique (Penzhorn et al., 1992). They were treated with amprolium (50mg/Kg B.W) for 7 days. After completion of treatment faecal samples were further collected on day 7 post treatment (PT) and faecal oocyst counts (FOC) were made. The data generated was analysed using SAS (version 9.2) to ascertain effect of amprolium treatment on OPG. Before analysis data generated on FOC through modified McMaster’s technique was normalized through log transformation (Log_{10}(x+100)).

Results and Discussion
The least squares OPG mean values for pre and post amprolium treatment were 5.019±0.5 and 4.90±0.7, respectively. The statistical comparison of the two LS means through Student’s T-test showed that there is no difference between pre-treatment and post-treatment OPG of the animals which implied that there was resistance among the Eimeria spp. against amprolium. The drug, amprolium, has been found effective to control the coccidiosis in goats when administered orally in multiple or single dose in goats and sheep (Young et al., loc. Cit.; Telman et al., 1989). However, the drug resistance had been recognized as major cause of the failure of drugs to control coccidiosis in the fowl (Chapman, 1984). In small ruminants, such reports on drug resistance in Eimerian infection are unavailable. The lack of information on the subject may be attributed to fact that intensive goat rearing, which is the source of frequent and regular Eimerian re-infection got momentum lately (as compared to poultry) and before that sheep and goats were maintained on grazing which hardly necessitated the use of anti-coccidial drugs. Further, resistance against amprolium in goats’ Eimeria spp. might have resulted due to variation in doses of the drug during extra-lable use. Under present scenario, intensive goat production is gaining popularity due to increase in demand for quality chevon and decrease in farm lands due to urbanization. The profit of intensive goat production depends mainly on disease control and therefore control of coccidiosis is of utmost importance. So, the limited available drugs for coccidiosis should be used judiciously to prevent the development of drug resistance.

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