GAVIN PUBLISHERS

Archives on Veterinary Science and Technology

Sultana R, et al. Arch Vet Sci Technol: AVST-129.

Research Article

Chemotherapy of Coccidiosis in Calves

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Citation: Sultana R, Ilyas SCH, Maqbool A, Iqbal ZCH, Ahmad MD, et al. (2017) Chemotherapy of Coccidiosis in Calves. Arch Vet Sci Technol: AVST-129.

Received Date: 09 August, 2017; **Accepted Date:** 25 August, 2017; **Published Date:** 03 September, 2017

Abstract

Thirty-Six bovine calves less than three months of age were purchased from the Market and reared under standard manage mental conditions. Prior to start the experiment claves were examined for the presence of endoparasite and treated accordingly. The calves were provided green fodder along with concentrates. After one week of deworming and acclimatization, 36 calves were divided into 6 groups. Group A, B, C, D and E were experimentally infected at the rate of 20000 oocysts of *E. bovis* Group 1 (Healthy control 1) was kept as healthy control (Non-infected and non- medicated). In present study, efficacy of different chemotherapeutic agents against coccidiosis in cow calves was determined. It was concluded amprolium, lasalocid, sulphaquinoxaline, toltrazuril were very effective in treatment of coccidiosis in calves. Non-significant difference-($P>0.05$) was observed in percentage efficacy of all four anti coccidial drugs at day 28 onward, i.e 100% for Amprolim, Sulphaquinoxaline, Toltrazuril and 99% for lasalocid. All the four drugs showed satisfactory results at their recommended dose against coccidiosis in cow calves and no toxic effects were found during and after treatment.

Keywords: Calves; Chemotherapy; Coccidiosis

Introduction

Livestock has an important and crucial role in rural economy and rural socio-economic development. There are at present about 44.4 million cattle and 37.7 million buffaloes. The annual production of milk production by cattle and buffalo is 20,143 million tons and 34,122 million tons respectively. Beef production is 2,085 million tons per year. Livestock products (Hides) by cattle and buffalo are 8,416 and 7,897 million, respectively. Nearly 8 million families are involved in livestock rising deriving more than 35 percent income from livestock production activities. Livestock can play an important role in poverty alleviation and foreign exchange earnings for the country [1]. Coccidiosis is an intestinal disease that affects several animal species. In cattle, it may produce clinical symptoms in animals from 1 month to 1 year of age, but it can infect all age groups [2]. Nearly all vertebrate animals host one or more species of the protozoan parasites that produce the infection referred to as Coccidiosis or coccidiosis. Thousands of coccidian species of herbivorous, omnivorous, and carnivorous animals have been described, and many more exist that remain unnamed.

Some cause serious disease, whereas others are of minor or no clinical importance. Producers, veterinarians, and biologists involved in production, health care, and management of ruminant animals usually recognize bloody diarrhea as a common indication of Coccidiosis [3] Coccidiosis is a 'Stress Induced' parasitic disease associated with bloody diarrhea, poor growth and sometimes death [4]. The disease is worldwide in distribution. Coccidiosis is caused by an intracellular protozoan that grows in the cells lining the intestines. Eight species of the genus *Eimeria* were identified. *Eimeria zuerni*, *E. subspherica* and *Eimeria bovis* are more pathogenic appeared to be dominant species [5,6]. The highly pathogenic *Eimeria zuerni* and *Eimeria bovis* occurred more frequently in big rather than in small farms [7]. Most cases of Coccidiosis occur during winter but outbreaks may occur sporadically throughout the year. The calves become infected when fed on pastures or dry lots contaminated by the faeces of older cattle or other infected calves. Mature cattle become infected when they are taken off pasture and crowded into feedlots or barns [8]. No coccidian oocysts were detected in calves less than 12 days old. The overall prevalence of

coccidia was the highest in 4-month-old calves (51.8%) and the lowest in >12 month old cattle (27.0%). The number of oocysts per gram of feces was significantly higher in young calves than in weaners and adults [9,10]. Once calves reach 6 months of age, they have a 100 % infection rate even though 5% or less show clinical signs. While 95% all losses may be due to sub clinical Coccidiosis [4]. Overcrowding, poor sanitation and poor nutrition are contributing factors for Coccidiosis [11]. A higher intensity of infection with strongyles and coccidia was found in the wet season than in the dry season Subclinical infection may lead to retarded growth. Stress produced by adverse conditions such as sudden dietary changes, prolong travel, extreme weather conditions can reduce the resistance of animals which may lead to infection with coccidian [12]. In severe infection death may occur as early as seven days after the onset of clinical signs. The extent of death ranged from 7-20% depends on the age of animal; the younger they are the more severe is the course of the disease [13,14]. Out breaks of coccidiosis in calves and feeder cattle may be handled by mass medication using sulfonamides, amprolium or monensin added to either the feed or water [8].

Materials & Methods

Thirty-Six bovine calves less than three months of age were purchased from the Market and reared under standard manage mental conditions. Prior to start the experiment claves were examined for the presence of endoparasite and treated accordingly. The calves were provided green fodder along with concentrates. After one week of deworming and acclimatization, 36 calves were divided into 6 groups. Group A, B, C, D and E were experimently infected at the rate of 20000 oocysts of *E. bovis*. Group (control 1) was kept as healthy control (Non-infected and non- medicated). Group (Healthy control 1): Animals of this group were kept as non-infected and non- medicated healthy control,

Group A: Animals of this group were kept as infected and non-medicated control.

Group B: Animals of this group were kept as infected and medicated with Amprolium. @ 10 mg / kg body weight / day for five days

Group C: Animals of this group were kept as infected and medicated with Toltrazuril was administered @ 15mg / Kg body weight for 4 days

Group D: Animals of this group were kept as infected and medicated with Lasalocid Sodium@ 1 mg / kg body weight / day for 4 days.

Group E: The members of this group were kept as infected and medicated with Sulfaquinoxaline. @ 5 mg / lb body weight /day for 4 days it was concluded amprolium lasalocid, sulphaquinoxaline, and toltrazuril were very effective in treatment of coccidiosis in calves. No toxic signs were observed in the present study by using amprolium, lasalocid, sulphaquinoxaline, toltrazuril at their recommended dose rate.

Monitoring of Experimental Calves

A faucal oocysts count in experimental calves was made at weekly interval in all the experimental animals. Counting will be done by McMaster Technique [15]. The results were analyzed statically by using one-way analysis of variance.

Results and Discussion

The project was designed to record the prevalence of coccidiosis and to conduct chemotherapeutic trials by using different drugs. For therapeutic trials thirty-six bovine calves under three months of age were purchased from Dairy farm and were randomly divided into six groups i.e Control 1, A, B, C, D and E. The animals in group Control 1 were healthy (non-infected) and no medicine was given and acted as control. Animals in group A were infected and no treatment was given and acted as infected control where as animals in groups B, C, D, and E were treated with Amprolium, toltrazuril, Lasalocid sodium and Sulfaquinoxaline respectively.

Faecal Oocyust Count

From the (Table 1), it was evident that all the drugs used in these trials i.e Amprolium, toltrazuril, Lasalocid sodium and Sulfaquinoxaline gave 100% efficacy on day 28 onward. These were also safe and no toxic effects were seen in any of treated case.

Groups	Name of Drugs	OPG					
		Zero Day	7th Day	14th Day	21st Day	28th	35th Day
		Mean +/- S.E P Value	Mean +/- S.E P Value	Mean +/- S.E P Value	Mean +/- S.E P Value	Mean +/- S.E P Value	Mean +/- S.E P Value
Control 1	Non-Infected Non-Medicated, Healthy Control	-	-	-	-	-	-
A	Infected Non-Medicated Control	28508+/-32.416 0.027	12050+/-323.006 0.000	6050+/-210.554 0.000	3050+/-136.626 0.000	2200+/-57.735 0.000	1200+/-44.721 0.000
B	Infected & Treated with Amprolium	28000+/-288.675 0.027	350+/-25.508 0.000	150+/-7.416 0.000	130+/-3.415 0.000	-	-
C	Infected & Treated with Toltrazuril	29750+/-561.842 0.027	300+/-24.614 0.000	135+/-11.690 0.000	50+/-6.831 0.000	-	-
D	Infected & Treated with Lasalocid	28050+/-610.327 0.027	400+/-14.43 0.000	280+/-7.745 0.000	140+/-8.563 0.000	80+/-3.415 0.000	-
E	Infected & Treated with Sulfaquinoxaline	27500+/-483.045 0.000	270+/-17.061 0.000	140+/-483.167 0.000	125+/-10.954 0.000	-	-

Table 1: Comparative efficacy of different drugs against Coccidiosis in calves.

Statistically there was no significant difference in the Oocyst Per Gram (OPG) of faeces between groups B, C, D, E. But when they were compared with the group A of infected non-medicated group there was highly significant difference noted. During the present study medication with toltrazuril at recommended 15 mg/kg to group C. Fecal samples were examined daily post treatment. It was also observed that on day 7 post treatment there was no diarrhea recorded in all animals. Total 6 experimental animals recovered. No oocysts of *Eimeria* in fecal samples was seen on day 37 indicate recovery from coccidiosis. Mundt et.al. [16], reported that early treatment with toltrazuril controlled the infection and prevented clinical disease while the effect of late treatment was limited. The application of 15mg toltrazuirl/kg BW with in the prepatent period recommended for the control of *E. bovis* infection. In the present study Amprolium was given at dose rate of 10 mg/Kg body weight for 5 days. Total of experimental animals recovered by day 6 post treatment. The results of drug trial with amprolium were also encouraging. Nearly similar results were reported by P.H.G. Stockdale and Anne Sheard [17]. Amprolium was for the most part effective in preventing clinical signs, in suppressing reduced rates of weight and in reducing oocyst production. Amprolium was also effective in a dosage of 143mg/kg body weight when given for 5 days (13 to 18 days after inoculation). Nearly similar results were also reported by [18]. In the present study lasalocid was given at dose rate of @ 1 mg / kg body weight / day for 4 days. Total of experimental animals recovered by day 6 post treatment. The results of drug trial with lasalocid were also encouraging. Nearly same results were reported by Peter D. Constable [19]. He reported that lasalocid a level of 1 mg/kg is the most effective and rapid and is recommended when outbreaks of Coccidiosis are imminent. It was concluded amprolium, lasalocid, sulphaquinoxaline, toltrazuril were very effective in treatment of coccidiosis in calves. No toxic signs were observed in the present study by using amprolium, lasalocid, sulphaquinoxaline, toltrazuril at their rec-

ommended dose rate. During the present study, highly significant difference ($P<0.05$) was observed treated groups compared with control group. Similar result was also reported by Horak [20]. It was also noted that no oocyst was found in any treated animal as was also reported by Aiello [21].

Acknowledgement

All the praises and thanks are for Allah, Almighty who bestowed me with the potential and ability to contribute a little material to the existing knowledge. I offer my humblest thanks to Holy Prophet "Muhammad" (Peace Be upon Him) who forever remains a torch of guidance and knowledge for humanity as a whole. I would like to express and deep sense of obligation to my major supervisor Prof. Dr. Azhar Maqbool, Prof. Dr. Mansoor-ud-Din Ahmad, Prof Dr. Zafar Iqbal Ch, Faculty of Veterinary Sciences, University of Veterinary and Animal Sciences, Lahore, Pakistan and Dr. Muhammad Zahid Ahmad, Kot Khawaja Saeed Teaching Hospital, Lahore and Dr Shabnum Ilyas Ch Deputy Director Livestock Lahore for their keen interest skillful guidance, enlightened views, valuable suggestions, constructive criticism, unfailing patience and an inspiring attitude during my studies, research project and writing of this manuscript.

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