

Prevalence of ectoparasite and ivermectin pour on treatment against tick infestation in calves in Jhalakathi district

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ABSTRACT

Prevalence of ecto-parasites was carried out at Jhalakathi sadar and its neighbouring villages Daulkathi, Noapara, Satrakanda, krishnokhari and Mantasa. A total 300 calves of both sexes with aged 6 to 15 months were examined for presence of ectoparasite from November 2011 to May 2012. Efficacy of Ivermectin pour on formulation on the tick and performance of body weight gain with hematological parameters were studied. A total of 10 calves aged 1 to 1.5 years were divided randomly into two equal groups, "A" and "B". The calves of group "A" served as control and the calves of group B were treated with ivermectin pour on formulation @ 200 µg/kg bwt. Weekly observations were recorded for live body weight, weekly gain in weight, weekly feed consumption, feed efficiency and blood parameters of calves for 28 days. The results showed that prevalence of ticks, mites, lice, mixed ectoparasitic infestation and no ectoparasitic infestation were 39%, 12%, 9%, 30% and 10% respectively. Female calves were more susceptible to ectoparasites than male calves (2.07 times more in female) and local breed calves were found to be more vulnerable to ectoparasites (3.15 times more than crossbreed calves). Ivermectin pour on found to 100% efficacy in this study. From the findings of this study it can be concluded that ivermectin pour on formulation is suitable for treating tick infestation in cattle in Bangladesh.

Key words: Ectoparasite, calf, ivermectin, tick, Bangladesh.

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INTRODUCTION

Ectoparasites in livestock are very common in Bangladesh. The ecto-parasites entirely live on blood and lymph of all kinds of vertebrate animal. The damages caused by ticks induce irritation, inflammation, exudation of lymph which coagulates to form crusts. On the other hand ticks play an important role as vector of deadly pathogens to animals and man. Mites cause dermatitis, alopecia and sometimes animals are infected secondarily by bacteria causing toxemia, septicemia and ultimately death of the animals.

The livestock sector represents a significant part of the global economy, particularly in the developing world. Thus, livestock provides energy, food, raw material, and manure for crops. It is therefore not surprising that the livestock sector, especially the dairy sector, has emerged as an important economic source for a vast majority of the rural population and a target for agribusiness in the dairy, meat, and various other products in the processed foods sector. Heavy infestation of ticks caused severe irritation, which made the animals to rub and scratch the skin that might result in loss

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of hairs. The skin became inflamed, corrugated and scaly which subsequently resulted in dermal lesions.

The diverse agro climatic conditions, animal husbandry practices and pasture management largely determine the prevalence and severity of various parasitic diseases including ticks. Epidemiological pattern of the ecto-parasitic diseases in the different agro climatic zones of the country would provide a basis for evolving strategic and tactical control of these diseases. Farmers tend to regard tick infestations as a problem of cattle but factually it is a serious problem. However, little information is available regarding the epidemiology of tick infestation of cattle in Jhalakathi District of Bangladesh.

In developed countries the principles of controlling ectoparasites are based on pasture, barn management and protective treatments but in Bangladesh where animals are mainly maintained in mixed farming system with virtually no pasture land for grazing, these methods have limitation to control parasites. So, protective treatments with routine dosing of anthelmintics and dipping with ectopesticides would be the choice of controlling the parasites in animals of Bangladesh. Ivermectin pour on formulation stimulates the release of GABA from nerve ending and enhance binding of GABA to special receptors at nerve junctions. Ivermectin pour on formulation preparation is easy to administration to the calf without any risk that is associated with any other routes of administration. Ivermectin pour on formulation was safest and more effective for the treatment of endo and ectoparasites. The chemicals used against ectoparasites are hazardous for both man and animals. Our poor farmers are illiterate they can not apply insecticides on the animal body properly. In addition, there is no report on the toxic and residual effect of ivermectin pour on formulation injectable formulation. As far as we know no research paper is available on the efficiency of ivermectin pour on formulation on calves in Bangladesh. Therefore, the present study was undertaken to know the prevalence of ticks in relation to sex and breed in the area. The efficacy of ivermectin pour on formulation against tick infestation in calves was studied. The hematological parameters of calves were studied

to know the adverse effect of ivermectin pour on treatment.

MATERIALS AND METHODS

The experiment was carried-out for a period of 6 months from November, 2011 to May 2012. Prevalence studies were carried out at Jhalakathi sadar in Barisal division of Bangladesh. Calves were selected from five villages nearby upazila headquarters. The villages were Daulkathi, Noapara, Satrakanda, krishnokhari and Mantasa. Among infected calves, ten calves of both sexes aged between 6 to 15 months were primarily selected in this study. All the calves were examined for the presence of ticks and the efficacy of ivermectin pour on formulation was studied against this naturally infested ticks. The calves were divided into 2 equal groups (Group A and B). Calves of group A was kept as infected control. Group B was treated with ivermectin pour on formulation @ 200µg/kg bwt.

The ticks were detected by physical examination of the animals and the presence of tick was recorded. The procedure of examination was to count the adult ticks of Para lumber region with an area of 6×5 i.e. 10 square cm. The selected 10 square cm were marked with a permanent colour and ticks within this area were counted at pretreatment (0 day) and post treatment days (7th, 14th, 21st and 28th). After injection of ivermectin pour on formulation all the calves of both control and treatment groups were closely observed for 28 days of post treatment and clinical parameters (severity of infestation, feeding efficiency, conditions of hair coat, body weight and adverse effects) and hematological parameters (TEC, Hb, PCV and ESR) were observed. All the calves were allowed for free pasture grazing for 2-3 hours daily. Adequate plenty of water was also provided to all calves.

Blood samples were collected from Jugular vein of the calves of treated and control group in vials containing anticoagulant (Sodium Citrate 3.8%) at day 0, 7th, 14th and 28th of treatment period to determine the effects of ivermectin pour on formulation on the following hematological parameters such as Total Erythrocyte Count (TEC), Hemoglobin (Hb) Content, Packed Cell

Volume (PCV) and Erythrocyte Sedimentation Rate (ESR) were determined as per method described by (Coffin, 1955).

RESULTS AND DISCUSSION

A total number of 300 calves were examined, 90% calves were infested of which female calves were 2.07 times more infested than male and local breeds of calves were 3.15 times more infested than cross breed calves (Table 1). Out of 300 calves 117 were infested with ticks (39%), 36 with mites (12%) and 27 with lice (9%) (Figure 1). It is found that ivermectin was 100% effective against tick infestation on as early as 7th days post treatment whereas the rate of tick infestation was constant in the calves of non treated control group.

The hair coat of the infected calves was rough with discolored wool on day 0. In group B after treatment with ivermectin pour on formulation, the hair coat started to become smooth and shiny gradually and on 28th day of treatment the hair coat of the treated calves was almost normal. The hair coat of the infected control group became more rough and discolored. The mean initial body weight of control and treated group were 41.38 kg and 42.51 kg on day 0 and on the 28th day of post treatment the mean values of body weight were 41.08 kg and 44.618 kg, respectively. In control group body weight of calves was decreased up to 0.74% on 28th day of treatment. On the other hand, the body weight was increased in treated group to the extent of 4.70% on 28th day of treatment. The body weight of calves increased significantly in treated groups on 28th day of treatment (Table 2).

In control group (A), TEC values was decreased up to 6.61% on 28th day of treatment whereas TEC values were increased 37.4%.. In control group, hemoglobin content was decreased upto 6.61% on 28th day of treatment. On the other hand, the hemoglobin contents were increased 1.4% in control groups but decreased 25.86% in treated group. In control group, PCV (%) values were increased up to 4.07% on 28th day of treatment Whereas PCV (%) values were decreased 188.34% in treated group (Table 2). In control group, ESR (mm/1st hr) values were increased upto 45.6% on 28th day of treatment. On

the other hand, the ESR (mm/1st hr) values were decreased 83.33% in treated group.

The present findings supports the earlier observation of Ninkov and Savin (1986), Nettleton and Beckett, (1976) and Sangwan et al.(1995) who reported 90% to 100% efficacy of ivermectin pour on formulation against tick infestation in calves. It was seen that no ectoparasites were present on body of animal 7th day onward. The mean value of haemoglobin was decreased in the ectoparasites affected calves. The results are in agreement with the reports of Nettleton and Beckett (1976) and Anosa (1977). In the present study significant changes in Hb (gm%) and PCV% were observed in the treated calves and this might be due to expulsion of blood sucking and other parasites and ecto-parasites from the body.

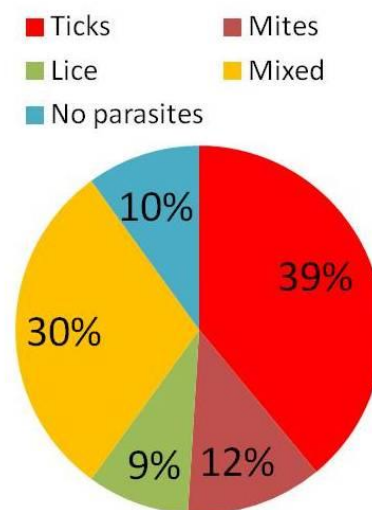


Figure 1 Prevalence of ectoparasites in calves at Jhalakathi Sadar upazila.

Table 1 Prevalence of ecto-parasitic infestation in relation to sex and breed of calves in Jhalakathi district.

Characteristics		No of infested calves	Intensity of infestation
Sex	Male	88	2.07
	Female	182	
Breed	Local	205	3.15
	Cross	65	

Table 2
Effects of treatment of physiological parameter of calves Jhalakathi district.

Parameters	Treatment	Pre-treatment		Post-treatment			% increased “+” % decreased “-”
		0th day	7th day	14th day	21st day	28th day	
Body weight (kg)	Control	41.38 ±01.67	40.242 01.162	40.12 ±01.193	40.02 ± 1.103	41.08 ±01.173	-0.74
	Treatment	42.51 ±01.28	42.92 ±01.13	43.184** ±01.1	43.59* ±01.165	44.618 ±01.5	+4.70
TEC (million/cu. mm)	Control	7.25 ±0.119	6.75 ±0.116	6.46 ±0.150	6.38 ±0.13	6.80 ±0.154	-6.61
	Treatment	7.27 ±0.084	8.32 ±0.128**	9.20 ±0.072**	10.50 ±0.162*	11.62 0.169*	+ 37.4
Hemoglobin content (gm %)	Control	6.57 ±0.420	7.182 ±0.197	7.02 ±0.180	6.88 ± 0.193	6.67 ±0.168	+1.4
	Treatment	6.45 ±0.144	7.32 ±0.097**	7.56 0.150**	8.34 ± 0.129*	8.70 ± .195*	-25.86
Packed cell volume (PCV) (%)	Control	27.99 ±0.909	29.63 ±0.259	29.2 ±0.251	29.44 ±0.267	29.18 ±0.295	+ 4.07
	Treatment	29.75 ±0.107	29.50 ±0.229**	29.49 ±0.159**	10.69 ±0.433**	10.30 ±0.469**	-188.34
Erythrocyte sedimentation rate (ESR mm/1st hr)	Control	1.044 ±0.019	1.034 ±0.012	1.404 ±0.017	1.828 ±0.026	1.920 ±0.033	+ 45.6
	Treatment	0.140 ±0.010	0.11 ±0.009	0.0916 ±0.021**	0.083 ±0.013*	0.015 ±0.007**	- 83.33

Values given above are mean±SE of 5 calves,

*Significantly increased (p<0.05), ** Significantly increased (p<0.01)

The present study demonstrate that ectoparasites are a problem of cattle in southern part of Bangladesh, specially Jhalakathi sadar. Among them, ticks play a major economic loss of calves in the form of morbidity and mortality. The calves were treated with ivermectin pour on formulation and found significant improvement of body weight and health condition. This study is in accordance with the study of Kabir et al. (2011) who higher prevalence in cattle of 1.5 years of age (46.28%) than in cattle of >1.5 years of age (27.80%). Infestation of tick was significantly higher (p<0.01) in female (59.37%) than the male (35.83%) cattle. Tick infestation was more prevalent in local (43.82%) cattle than the cross-bred (24.13%) cattle. The study suggest to control of ectoparasite in cattle and the treatment of tick infestation by ivermectin pour on formulation.

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