Journal of Animal and Veterinary Advances 2 (7): 382-384, 2003

Comparative Efficacy of Aldazole, Fenvet and Ivomec Injection Against Natural Infection of Gastrointestinal Nematodes in Goats

[1]M. S. Islam, [1]F. Begum and [2]M. S. Alam
[1]Department of Physiology, Biochemistry and Pharmacology,
Sylhet Govt. Veterinary College, Tilagor, Sylhet, Bangladesh
[2]Field Disease Investigation Laboratory, Tilagor, Sylhet, Bangladesh

Abstract: Comparative efficacy of Aldazole, Fenvet and Ivomec Injection were investigated against natural infection with gastrointestinal nematodes of goats in Bangladesh. Ivomec injection showed maximum efficacy of 100% followed by Fenvet (95.35%) and Aldazole (90.11%) on the basis of reduction of faecal EPG recorded. The haematological studies at post treatment day "28" shown that TEC (million/cu mm), Hb (gm%) and PCV (%) were significantly increased ($P<0.01$) than that of pretreatment day "0" but ESR (mm $1hr^{-1}$) was decreased upto 100% in goats.

Key words: Efficacy, anthelmintics, nematodes and goats

Introduction

Goats are reared mainly in the rural areas of Bangladesh. The climatic condition of Bangladesh is favourable to the ecological conditions suitable for parasites of which the helminth parasites predominates. The gastrointestinal nematodiasis causes great economic losses in the form of mortality, stunted growth, weight loss, decreased milk and meat production and market value of the living animals (Islam, 1985). The incidence of gastrointestinal nematodes in goats and sheep in Mymensingh was reported by Haq and Shaikh (1968). Modern anthelmintics are widely used in Bangladesh such as Benzimidazoles like Albendazole and Fenbendazole and very recently Ivermectin is being used sporadically. Most of the anthelmintics are used in this country are being imported and there is no data available about efficacy, safety, toxicity and dose regime in livestock in Bangladesh.

The present investigation was aimed to evaluate the comparative efficacy of modern anthelmintics Aldazole (Albendazole), Fenvet (Fenbendazole) and Ivomec injection (Ivermectin) against gastrointestinal nematodiasis in goats irrespective to the species involved and their effects on haematological parameters like TEC, Hb, PCV and ESR were also included in this investigation.

Materials and Methods

The densely goat populated, waterlogged and low lying village Fatehpur under the Upazilla Goainghat, Sylhet, Bangladesh was selected for this investigation. Eighty goats of 12-18 months old of both sexes selected within the randomely sampling goats which were severely infected with gastrointestinal nematodiasis irrespective to the species of parasites involved. These eighty goats were randomely divided into four groups each comprising of twenty goats and marked as A, B, C and D.

Blood and faecal samples were collected from each goats and after afixing a proper identification tag and was immediately brought to the Field Disease Investigation Laboratory, Tilagor, Sylhet, Bangladesh for faecal examination. McMaster faecal egg count method described by Gordong *et al.* (1939) was used. The haematological parameters were examined in the laboratory of the Department of Physiology, Biochemistry and Pharmacology at Sylhet Govt. Veterinary College, Tilagor, Sylhet, Bangladesh.

Goats of group A were treated with tablet Aldazole (Albendazole, Techno drugs, Narshingdi, Bangladesh) orally @ dose rate of 7.5 mg kg^{-1} body weight, group B were treated with tablet Fenvet (Fenbendazole, Globe Research Lab, Ltd., Bangladesh) orally@ dose rate of 7.5 mg kg^{-1} body weight, group C were treated with Ivomec injection (Ivermectin 1%, Glaxo India, Ltd) subcutaneously @ dose rate of 200 μg kg^{-1} body weight and goats of group D served as untreated control.

All the goats of treated and control groups were closely observed for 28 days after treatment. The faecal samples were collected from the treated and control groups of goats on 7^{th}, 14^{th}, 21^{st} and 28^{th} day of treatment to investigate the faecal egg count. The blood samples were collected from the treated and untreated control groups on the day "28" of treatment and haematological parameters TEC, Hb, PCV and ESR were determined as per method by Coffin (1995). All the data were statistically analysed following the standard methods by Snedecor and Cochran (1967).

Results and Discussion

In this study the goats of group A were treated with the tablet Aldazole (Albendazole) @ 7.5 mg kg^{-1} body weight orally and the rate of reduction in EPG on the 28th days were 90.11% (Table 1). The result is in conformity with the earlier researchers. Guha *et al.* (1986) stated that Aldazole @ 3.5 mg kg^{-1} body weight was 100% effective against gastrointestinal nematodiasis in naturally infected goats. Pomroy *et al.* (1988) reported that Aldazole at either 3.8 mg kg^{-1} repeated after 24 hours or as a single dose rate 7.6 mg kg^{-1} body weight was > 99% effective in naturally infected Angora-X goats. Guha and Banerjee (1987) indicated that Albendazole at the dose rate of 3.5 mg kg^{-1} body weight on goats showed 100% effective. Findings of the present study reasonably agreed with the findings of the above mentioned authors. The goats of group B were treated with tablet Fenvet (Fenbendazole) @ 7.5 mg kg^{-1} body weight orally and the rate of reduction on EPG on the 28th day was 95.33%. Haq *et al.* (1984) reported that Fenbendazole at the dose rate of 5 mg kg^{-1} body weight was 100% effective in naturally infected with various gastrointestinal nematodes. Rahmatulla *et al* (1985) reported that Fenbendazole at the dose rate of 5 mg kg^{-1} body weight on goats was 100% effective after 5 days of treatment. Chand-Thakuri *et al.* (1994) found that Fenbendazole at the dose rate of 10 mg kg^{-1} body weight was 100%, 100% and 33% effective against Trichostrongyles, Strongyloides and Trichuris respectively. The findings of the present study is more or less similar to the earlier researchers.

The goats of group C were treated with Ivomec (Injectable Ivermectin) @ 200 μg kg^{-1} body weight subcutaneously and the rate of reduction of EPG was 100% on the 28th days. This result is in aggreement with the earlier researchers. Islam *et al.* (1998) reported the 100% efficacy of Ivermectin (pour on formulation) against gastrointestinal nematodes in cattle @ dose rate of 500 μg kg^{-1} body weight. Ponikarv (1989) reported 100% efficacy of Ivomec-F (Ivermectin) at the dose rate of 1 mg kg^{-1} body weight subcutaneous injection against gastrointestinal nematodes. Shastri (1989) reported 97.5% and 93.3% efficacy of Ivermectin against gastrointestinal nematodes in goats. Bagherwal *et al.* (1991) observed 100% efficacy of Ivermectin against naturally acquired nematodiasis in goats at a single subcutaneous injection of 0.2 mg kg^{-1} body weight. Mukherjee *et al.* (1994) reported the 100% efficacy of Ivermectin against all types of nematodes (Trichostrongylus spp. Strongylus spp. Trichuris spp. and Nematodirus spp.) in goat during a comparative study of 3 anthelmintics in Cashmere. Dacasto and Cocuzza (1995) reported that Ivermectin was highly effective at the dose rate of 200 μg kg^{-1} body weight against gastrointestinal nematodes in goats. Yadav *et al.* (1996) observed 99%-100% efficacy of Ivermectin against gastrointestinal nematodes in sheep and goat at the dose rate of 0.2 mg /kg body weight.

In untreated naturally parasitised control group D the mean EPG was 911 at "O" day and at 7th, 14th, 21st and 28th days were 930, 950, 970 and 995 and the rate of infection were increased.

During the study of haematological parameters it was found that TEC, Hb and PCV were significantly ($P < 0.01$) increased and on the other hand ESR were decreased upto 100% in treated groups (Table 2). This findings are in aggreement to other researchers. Thedford *et al.* (1990) studied the increased PCV of treated animals on days 28 and 56 post treatment compared to treated animals on day "O" and controls on day 56. The mean value of Hb, PCV and TEC were decreased and ESR values were increased in untreated

Table 1: Comparative efficacy of Aldazole, Fenvet and Ivomec injection against gastrointestinal nematodes in Goats

Group	No. of goats	Drug with dose/kg body weight	Pretreatment	Post treatment				
				7th day EPG Mean ± SE	14th day EPG Mean ± SE	21st day EPG Mean ± SE	28th day EPG Mean ± SE	% reduction at day "28"
A	20	Aldazole 7.5mg kg^{-1} body wt.	708 ± 7.50	171 ± 5.41	133 ± 6.63	106 ± 5.46	70 ± 5.32	90.11
B	20	Fenvet 7.5mg kg^{-1} body wt.	750 ± 12.09	140 ± 4.25	100 ± 2.51	60 ± 5.61	35 ± 3.15	95.33
C	20	Ivomec injection 200μg kg^{-1} body wt.	855 ± 10.22	0	0	0	0	100
D	20	Untreated control	911 ± 7.29	930 ± 9.13	950 ± 8.98	970 ± 8.98	995 ± 5.40	-

Table 2: Effect of Aldazole, Fenvet & Ivomec injection on haematological parameters in goats

Group	Drug with dose/kg body weight	Pretreatment day "O"				Post treatment day "28"			
		TEC Million/cu mm Mean ± SE	Hb gm% Mean ± SE	PCV% Mean ± SE	ESR Mean ± SE	TEC million/cu mm Mean ± SE	Hb gm% Mean ± SE	PCV % Mean ± SE	ESR mm/Ihr Mean ± SE
A	Aklazole 7.5mg kg^{-1} body wt.	8.25 ± 0.14	8.34 ± 0.16	28.0 ± 0.10	0.11 ± 0.01	12.11 ± 0.06	10.16 ± 0.13	29.32 ± 0.13	0
B	Fenvet 7.5mg kg^{-1} body wt.	8.18 ± 0.12	8.33 ± 0.08	28.07 ± 0.12	0.10 ± 0.01	12.27 ± 0.12	10.06 ± 0.13	30.16 ± 0.06	0
C	Ivomec injection 200μg kg^{-1} body wt.	8.16 ± 0.10	7.94 ± 0.09	27.76 ± 0.12	0.12 ± 0.01	13.11 ± 0.12	10.21 ± 0.07	30.02 ± 0.08	0
D	Untreated control	8.21 ± 0.12	8.91 ± 0.15	27.96 ± 0.08	0.11 ± 0.01	7.48 ± 0.15	7.93 ± 0.06	26.90 ± 0.10	0.19 ± 0.01

TEC = Total Erythrocyte Count Hb = Haemoglobin PCV = Pack Cell Volume ESR = Erythrocyte Sedimentation Rate
SE = Standard Error ** = Significant at 1% level (P < 0.01)

naturally parasitised controls group. This study indicated that Ivomec (Ivermectin) is a most effective drug against gastrointestinal nematodiasis in goats than that of Aldazole (Albendazole) and Fenvet (Fenbendazole).

From this research findings the Veterinarian may use the specific anthelmintic for gastrointestinal nematodiasis in goats. Further studies on anthelmintic Pharmacokinetics and toxicity would be helpful.

References

Bagherwal, R. K., R. S. Sisodia and S. B.Ghosal, 1991. Efficacy of Ivermectin against naturally acquired nematodiasis in goats with special reference to its residual effect. Indian Vet. Med. J., 15: 291-292.

Chand-Thakuri, K., R. P. Thakur and K. Rai, 1994. Comparative efficacy of Fenbendazole, Mebendazole and Krimos Powder against natural infection of gastrointestinal nematodiasis of goats. Vet. Review-Kathmandu, 9: 1-3.

Coffin, D. L., 1995. Mannual of Veterinary Clinical Pathology. Third ed. Coinstock Publishing Associates. Inc. Ithaca New York, 116-157.

Dacatso, M. and U. Cocuzza, 1995. Efficacy of Ivermectin in reducing gastrointestinal nematode faecal egg counts in goat in Burundi. Preventive Veterinary Medicine, 23:173-178.

Gordong H. McL and H. V. Whitlock, 1939. A new technique for counting nematode eggs in sheep faeces. JCSIR, Australia, 12: 50-52.

Guha, C. and A. K. Banerjee, 1987. Efficacy of four anthelmintics in the treatment of gastrointestinal nematodes of goats, a comparative assesment. Indian Vet. J., 64: 335-337.

Guha, C., S. Roy and A. K. Banerjee, 1986. Efficacy of Albendazole (Axalgon) in the treatment of gastrointestinal nematodes in goat in West Bengal. Indian Vet. J., 63: 1042-1044.

Haq, S. and H. Shaikh, 1968. A survey of helminths parasitising the gastrointestinal tract of goat and sheep in East Pakistan. Pak. J. Vet. Sci., 2: 54-62.

Haq, S., B. B.Verma and D. K. Thakur, 1984. Efficacy of Fenbendazole against mixed infections with gastrointestinal nematodiasis in goat. Indian Vet. J., 61: 509-511.

Islam, K. S., 1985. Present situation of livestock and Poultry Diseases in Bangladesh. In Jabbar, M. A. Bangladesh Poshushampad Unnayan – Neiti O Kowshal. BARC, Dhaka and ADC, N. Y. P.,48-128.

Islam, M. I., K. Rafiq, M. Mostafa, M. A. Alim and M. A. Haque, 1994. Efficacy of Ivermectin against lice and ticks infestation in Cattle of Bangladesh. The Bangladesh Veterinarian.,15: 29-32.

Mukherjee, R., R. Laha, D. Bhattacharya and Reena Mukherjee, 1994. Comparative efficacy of tetramisole, Fenbendazole and ivermectin against gastrointestinal nematode infection in Pashmina (Cashmere) goats. Indian J. Anim. Health, 33: 125-127.

Pomroy, W. E., M. A. Gething and W.A. G. Charleston, 1988. The efficacy of Albendazole against some gastrointestinal nematodes in goats. Newzealand Vet. J., 36: 105-107.

Ponikarov, A. V., !989. Efficacy of Ivomec-F injection in sheep. By Uleten- Vesesoyunogo-Instituta-Gelmintologi-im,-K-1-Kryabina, 52:86.

Rahmatulla, P. S., R. C. Rajasudharam, R. V. Suresh and R. Nagarujarn, 1985. Effect of Fenbendazole as anthelmintic of goats. Indian Vet. J., 52: 993-995.

Shastri, U. V., 1989. Efficacy of Ivermectin against gastrointestinal nematode infection in goat. Indian Vet. J., 66: 345-346.

Snedecor, G. W. and W. G. Cochran, 1967. Statistical Methods. Fifth Edn. The Iowa State Univ. Press, Ames Iowa, U.S.A.

Thedford, T. R., F. D. Worman and K. M. Kelmogile, 1990. Effects of Ivermectin on Packed Cell Volume of goats when used to treat lice infestation. ATIP working paper. WP-26,ii-6pp.

Yadav, C. L., S. K. Ghouri, B. P. Singh and M. C. Sharma, 1996. Benzimidazole resistance in *Haemonchus contortus* of sheep and goats in Uttar Pradesh in India. J. Vet. Parasitology, 10:47-51.