

# PREVALENCE AND CONTROL OF GOAT WARBLER

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## Summary

The prevalence of warbles (*Przhevalskiana silenus* Brauer) and efficacy of ivermectin against naturally occurring warble infestation in goats in Pothohar area of Pakistan was investigated. About 58.4% of the examined goats (total 301), were infested by the warbles. The number of warbles per animal ranged from 1 to 23 (mean 5.1). Ivermectin (ivermectin 1% w/v, Merck Sharp and Dhome, Netherlands) at the dose of 1 ml/50 kg of body weight proved excellent against this pest. The larvae of all the stages died inside the warbles after treatment and no skin perforations were observed in the treated animals. No side-effects of the drug were observed in the treated animals, except 2-3 minutes of bleating in a few animals at the time of injection.

(Key Words: Warbles, Efficacy, Ivermectin, Hides, Skins, Cattle Grubs, Pothohar, Pakistan)

## Introduction

Hides and skins are amongst the major export items of Pakistan. A sizeable amount of foreign exchange is earned every year through the export of these two commodities. During 1987-88, hides and skins of worth Rs. 4.00 million (US\$ = Rs. 22.40) were exported (Finance Division, Islamabad, 1989). But a fairly high number of hides and skins is damaged by the warble infestations. The infestation, evident in the form of perforations in hides and skins, lowers down their market value or even becomes causative factor of their rejection for sale. The other economic losses inflicted by this pest are reduced weight gain and milk production in infested animals (Soulsby, 1982).

Chakwal and Fateh Jang areas of Pakistan are semi-hilly rangelands and goat raising is a major agricultural enterprise of the farmers in this area. In this area the incidence of warble infestation in cattle and goats is generally believed to be high. This paper presents the prevalence

of warble infestation *Przhevalskiana silenus* Brauer, in "Jattal" (hairy) goats maintained in this area. Efficacy of Ivermectin (Ivermectin 1% W/V, Merck Sharp and Dhome Netherlands) against this infestation was also investigated.

## Materials and Methods

The study was conducted during December, 1988 and January, 1989. Eight flocks (4 each at Chakwal and Fateh Jang) of local "Jattal" (hairy) breed were included in the study. These goat flocks were being maintained by different farmers in the area. The age of animals ranged from 1 to 5 years. The entire body of each animal was palpated with hands for the presence of warbles. The number of warbles on each infested animal were recorded.

Seventy-five infested goats, having 2-15 warbles on their body, were given Ivermectin at a dose of 1 ml/50 kg of body weight, parenterally by subcutaneous injection in their neck/shoulder region. After 24 hours of treatment, the experimental animals were observed daily to record the lysis of larvae in the warbles or their emergence through the perforations. Side-effects of the Ivermectin were also noted.

## Results and Discussion

Of 301 experimental goats, 58.5% were

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TABLE 1. PREVALENCE OF WARBLER IN GOATS AT FATEH JANG (DISTRICT ATTOCK) AND CHAKWAL AREA OF PAKISTAN

Area	Flock No.	No. of Animals		Average No. of Warbles/animal $\pm$ S.D.
		Examined	Infested with Warbles (%)	
Fateh Jang	A	101	65 (64.3)	6.75 $\pm$ 5.332
	B	85	52 (51.1)	4.28 $\pm$ 4.433
	C	39	20 (51.2)	4.70 $\pm$ 3.826
	D	8	5 (62.5)	8.40 $\pm$ 8.080
Total	4	233	142 (60.9)	
Chakwal	E	20	14 (70.3)	4.78 $\pm$ 3.166
	F	12	4 (33.3)	2.00 $\pm$ 1.154
	G	13	6 (46.1)	4.83 $\pm$ 3.763
	H	23	10 (43.4)	5.00 $\pm$ 3.366
Total	4	68	34 (50.0)	
Grand Total	8	301	176 (58.4)	

found infested with warbles. The infestation was 60.9% and 50.0% at Fateh Jang and Chakwal, respectively (table 1). The number of warbles per animal ranged from 1 to 23 (mean = 5.1). The warbles were observed on the back of animals.

Although various development schemes aimed at control and eradication of warble fly menace have been launched in the country, the published information regarding the magnitude of disease is scanty. An infestation of 48.5% in seven districts of the Punjab province and 84.9% in Attock district alone has been reported in 1976-77 (Department of Livestock and Dairy Development, 1977). A slight decrease in infestation recorded in the current study might be due to the previous work on the control of this menace and widespread use of insecticides in the agriculture sector.

The efficacy of Ivomec for curing warbles was found to be 100%. In all the 75 treated goats, the nodules degenerated and lysis of the larvae in warble form occurred after the injection of Ivomec. Perforations in the skin of infested goats did not occur in any of the treated animal. Complete lysis of the larvae occurred also in the goats in which perforation in the skin had already taken place and the larvae were seen respiring through the pores before the injection of drug. No side-effects of the drug were seen in any of the treated animal except bleating in a few animals at the time of injection. However, this lasted for 2-3 minutes only.

Ivomec is one of the ivermectins, a group

of drugs that has a unique mode of action against a broad spectrum of parasites. It paralyzes nematodes and arthropods by stimulating gammaaminobutyric acid (GABA) mediated chloride ion conductance. GABA is an important neurotransmitter in vertebrates and invertebrates. It is not clear whether this is due to ivermectin (i) action as a GABA agonist, (ii) stimulating presynaptic GABA release, or (iii) potentiating GABA binding to its receptor; but the end result is the blocking of postsynaptic transmission of nerve impulse (Bennett, 1986).

The efficacy of ivermectin against cattle grubs (*Hypoderma* spp.) has been studied by many workers (Badiola et al., 1982; Argente and Hillion, 1984; Yousif and Dwivedi, 1984; Leaning, 1984; Rioni and Restani, 1984; Kofler and Glawischnig, 1985; Alva-Valdes et al., 1986; and Ziv et al., 1988) but the reports on its efficacy against goat warbles are few. Zeybek (1985) reported ivermectin to be 100% effective against first and second stage larvae, and 98.6% against the third stage larvae of *Hypoderma* in goats. Tassi et al., (1987) reported that no warbles were found in goats treated with ivermectin. The findings of the present study regarding the efficacy of ivermectin against warble in goats are in agreement with the results of these studies.

Further studies are in progress to diagnose the infestation in animals at an early stage and determine the chemoprophylactic efficacy of ivermectin in controlling this pest.

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