

PRELIMINARY TRIAL ON THE EFFECT OF
LEAVO-TETRAMISOLE ON VARIOUS
INTESTINAL HELMINTHIASES IN IRAN*

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ABSTRACT

The effect of a new *anthelmintic* compound, Leavo-tetramisole, in the mass-treatment of several intestinal heminths has been evaluated during a study undertaken among the population of the village of Zavieh Hajian, located about 10 km northwest of Dezful, Khuzestan.

In the autumn of 1972, a total of 83 inhabitants, 65 of whom were simultaneously infected with *Ascaris*, hookworm (*Ancylostoma*) and *Trichostrongylus* spp. and 18 of whom were infected with the first two helminths only, were treated with 40 mg tablets of the drug. The drug was given in a single dose of one tablet to the age group below 6, two tablets to the age group 6-15 and 3 tablets to adults. A group of 61 patients was kept as a control.

Administration of the drug resulted in cure rates of 98.8% for *Ascaris*, 95.2% for *Ancylostoma* and 93.9% for *Trichostrongylus*. The reduction in the mean number of eggs among remaining cases was very high.

Low intensity side-effects, which were encountered among 20% of treated cases only, included, in order of frequency, abdominal pain, headache, vertigo and vomiting.

The high efficacy of this drug on 3 species of helminths prevalent in the area, together with its effect in a single dose, make it the drug of choice

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for the mass-treatment of patients infected with helminthiasis in the south-western part of Iran.

INTRODUCTION

The high prevalence and intensity of various intestinal helminthiasis in Iran (Arfaa, 1972) has resulted in the planning of a program by the health authorities of the country for the control of these infections.

The effect of mass-treatment, alone or together with other measures, on the control of helminthiasis has already been shown in a number of countries (Morishita, 1973). Among various factors, the success of mass-treatment depends mainly on the efficiency of the anthelmintics used.

In this paper, an evaluation of the effect of Levamisole, a new anthelmintic drug, is presented.

MATERIAL AND METHOD

Out of 170 inhabitants of the village of Zavieh Hajian, located 10 km southwest of Dezful, a city in southwestern Iran, stool examinations using flotation and Stoll methods were performed for 158 persons. Of those people found infected with various intestinal helminths, 65 who were simultaneously infected with *Ascaris*, hookworm (*Ancylostoma duodenale*) and *Trichostrongylus* spp. plus 18 who were positive for the first 2 helminths only, were selected for the trial. In addition, 61 persons, of whom 31 were infected with *Ascaris*, hookworm and *Trichostrongylus* and 30 were positive for the first 2 helminths only, were kept untreated as a control group.

Levamisole was administered in the form of 40 mg tablets in a single dose after breakfast according to the following schedule: one tablet for the age group below 6, 2 tablets for the age group 6 - 15 and 3 tablets for the age group 16 and over (approximately 2.5 mg/kg body weight). A saline purge was also given to all treated cases 4 hours after administration of the drug.

The faeces of treated cases, which were collected by the patients for 24 and 48 hours after therapy in plastic pans containing 10% formalin, were transferred to the laboratory and all worms expelled during these periods were counted. The side-effects encountered up to 48 hours after treatment were also recorded. All treated cases were examined by exactly the same methods 3 weeks after treatment.

RESULTS

The prevalence of various intestinal helminths among 158 persons of various age and sex groups examined in the village was: 67% for *Ascaris*, 87% for hookworm, 66% for *Trichostrongylus* and 18% for *Hymenolepis nana*. The cure rates observed for *Ascaris*, *Trichostrongylus* spp. and hookworm and the reduction in the mean number of eggs excreted by the remaining positive cases

according to various age groups are summarized in the table. As indicated in this table, the administration of Levamisole resulted in cure rates as high as 98.8%, 95.2% and 93.9% for ascariasis, ancylostomiasis and trichostrongyliasis respectively. The reduction in the mean number of eggs was very high, as only a few people remained positive after therapy.

No side-effects were recorded for 65 (80%) cases. The side-effects encountered in the others were usually mild and, according to frequency, included abdominal pain in 11.6% of all treated cases, headache (4.6%), vertigo (2.3%), vomiting (2.3%) and nausea (1.1%).

A total of 576 hookworms and 80 *Ascaris* were collected from the faeces of patients.

Follow-up examination of patients in the control group showed a reduction of 31%, 10% and 20% in the prevalence of *Ascaris*, hookworm and *Trichostrongylus* respectively.

DISCUSSION

The results of this study indicate the high efficacy of the drug on various soil-transmitted helminths in the area under study. The same high cure rate has been reported with this drug by other workers. Hall *et al.* (1970) reported a cure rate of 95.8% of cases with light infection of ascariasis, and similar results were observed by Huggins *et al.* (1970). A high cure rate was also reported when the drug was used for the treatment of hookworm by Al-Saffar *et al.* (1971) in Iraq. Huggins (1970), however, while finding a cure rate of 92.3% for *Ascaris*, stated that the drug has no effect on hookworm. Although the species of hookworm involved in the trial by Huggins (1970) is not specified, the high effect of this drug on both species of human hookworm has already been shown by other workers (Davis, 1973) and its high effect on *Ancylostoma* has been shown during the present trial.

Other factors which indicate the superiority of Levamisole in the mass-treatment of helminthiasis are the minimum side-effects produced, the low price of the drug in a single administration and its efficacy. Because of the encouraging results obtained with the use of this drug during the present trial, further studies using this compound in the mass-chemotherapy of helminthiasis are strongly suggested.

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TABLE: Cure rates and egg reduction observed among various age groups infected with different intestinal helminths after treatment with Levamisole (Zavieh Hajian, Dezful, 1973)

Age Group	Ascaris			Hookworm			Trichostrongylus spp.		
	Number Treated	Cure Rate %	% Reduction in mean no. of eggs	Number Treated	Cure Rate %	% Reduction in mean no. of eggs	Number Treated	Cure Rate %	% Reduction in mean no. of eggs
below 6	4	100	100	4	100	100	2	100	100
6-10	23	95.7	93.2	23	82.7	64	16	82.4	61.6*
11-20	25	100	100	25	100	100	20	100	100
21-40	17	100	100	17	100	100	15	100	100
41+	14	100	100	14	100	100	12	91.7	33.3
TOTAL	83	98.8	99.8	83	95.2	98.1	65	93.9	88.7

* Has increased.