

TRIAL OF PHENYLEN DI - ISOTHIO - CYANATE (JONIT) IN THE MASS - TREATMENT OF INTESTINAL HELMINTHIASIS *

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ABSTRACT The effect of Phenylen di-isothiocyanate (Joint) in the mass-treatment of various intestinal helminthiases was evaluated among the inhabitants of a village in Dezful, southwest Iran.

Stool samples collected and examined from 17 persons showed infection rates of 80% for *Ancylostoma duodenale*, 57.3% for *Ascaris*, 46.7% for *Trichostrongylus* spp. and 22.8% for *H. nana*.

Seventy-one persons (41 children and 30 adults), 92.9% of whom were infected with *Ancylostoma*, 63.3% with *Ascaris*, 61.9% with *Trichostrongylus* spp. and 23.1% with *H. nana*, were treated with doses of 100 to 300 mg. of the drug according to their age.

A stool examination of these patients undertaken 30 days after treatment showed cure rates of 50% for *H. Nana*, 39.3% for *Ancylostoma*, 33.6% for *Trichostrongylus* spp. and 6.6% for *Ascaris*.

The side effects observed, in order of severity, were nausea,

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vomiting, diarrhoea, abdominal pain and vertigo.

INTRODUCTION The public health importance of helminthiasis as regards morbidity and complications in many parts of the world is a fact already established.

It is known that many of these infections will be controlled by the introduction of sanitation facilities and sanitary habits, but because of the large budget needed for this type of approach, which is beyond the economical capacity of developing countries, mass-treatment may be one of the best solution for the control of helminthiasis.

The present paper shows the result of a trial of a new anti-helminthic drug in the control of helminthiasis in a rural area in Iran.

MATERIAL AND METHODS The village of Abbas Abad, with a population of 176, located about 25 km. south of Dezful, Khuzestan, was chosen for this trial.

Stool examinations using Direct and Willis flotation methods were performed for 171 persons in the village to find the prevalence of various intestinal helminths.

Jonit capsules (50 mg.) were given to 71 infected persons (41 school children and 30 adults) with the following dosage as recommended by the manufacturer: children under 5 were not treated; one capsule was given twice to patients in the age group 5-10 (100 mg.); 2 capsules twice to age group 11-15 (200 mg.); and 2 capsules 3 times to the age group of over 15 (300 mg.). Doses of the drug were administered at 12 hour intervals and after meals. No purgative was given.

Side-effects encountered were recorded during the course of treatment and for 48 hours thereafter. The stools of all 41 students were collected 48 hrs. after treatment in a 10% formaline solution, and the number and species of worms expelled were counted and identified.

A follow-up examination was undertaken by a stool examination of the treated persons about 30 days after therapy, the results of which are shown in Table I (figures inside parentheses).

RESULTS 1. *Prevalence of various helminthiasis:* The results of this survey indicate that: of 171 persons examined in this village, 80% were infected with hookworm (the only species found was *Ancylostoma duodenale*), 57.3% with *Ascaris*, 46.7% with *Trichostrongylus* spp. and 22.8% with *Hymenolepis nana*. The maximum rate of infection for hookworm was found in the age group 6-20

(96%), for ascariasis in age group 6-10 (93%), for trichostrongylidosis, in age group 6-20 (61.5%) and for *H. nana* in the age group below 6 (46.8%). The prevalence of infection in various age groups in 71 persons chosen for treatment is shown in Table I.

2. *Reduction of prevalence*: As is indicated in Table I, cure rates for most helminthiasis after treatment is not very high.

The highest cure rate occurred for the infection with *H. nana* (50.0%).

A 39.2% and 38.6% cure rate have occurred for infections with hookworm and *Trichostrongylus* spp. respectively, and a very slight reduction (6.6%) for ascariasis.

3. *Expelling of worms*: Of 41 patients treated, from whom 48 hr. stools were collected, 25 (13 males and 12 females in age group 6-15) expelled 141 *A. duodenale* (68 male and 73 female worms); five persons (2 males and 3 females) expelled 7 *Ascaris* (4 female and 3 male worms); and none expelled *Trichostrongylus* species.

4. *Side-effects*: Side-effects encountered, in order of frequency were: headache (among 49.2% of the patients), nausea (49.2%) mild diarrhoea (36.6%), abdominal pain (33.8%) and vertigo (18.3%).

The majority of side-effects occurred in the first 3 hours after the administration of each dose.

DISCUSSION The result of this trial indicates that Joint has some effects in the treatment of intestinal parasites.

Compared with the results obtained by other workers in the north of Iran (Barzegar, 1969), the success achieved in the treatment of hookworm infection was less satisfactory.

This may indicate that this drug is more effective on *Necator americanus* (the predominant species in the north) than on *Ancylostoma duodenale*.

The reason for not finding any worms of *Trichostrongylus* spp. in the stool of treated cases might probably be due to the lysis action of the drug on the worm and also to the difficulty of collecting this tiny worm from stool.

The results of the trial are more or less similar to the results obtained by some of the workers outside the country (Gaitonde *et al.*, 1969; El-Haway *et al.*, 1971).

More investigations on a larger scale are needed to clarify the real effect of this drug on various helminthiasis.

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TABLE I

The percentage of infection with various helminthiases in different age groups before and after therapy with Jonit

(Figures inside parentheses indicate the results after therapy)

(Duzdul - 1968)

Age Group	No. Examined	Percent infected with:			
		H.W.	A. l.	Trichos. (T.spp.)	H. nana
6-10	27 (27)	96.2 (85.1)	70.3 (66.6)	62.9 (37.0)	48.1 (22.2)
11-15	18 (17)	94.4 (35.2)	77.7 (47.0)	83.3 (52.9)	11.1 (7.6)
16-20	3 (3)	100 (100)	33.3 (100)	33.3 (66.6)	33.3 (0)
21-40	8 (6)	75 (33.3)	50 (63.3)	50 (16.6)	12.5 (16.6)
41-60	13 (13)	92.3 (46.2)	53.8 (53.7)	53.8 (38.5)	15.3 (0)
61 +	2 (2)	100 (0)	0 (50)	0 (0)	50 (0)
TOTAL	71 (68)	92.9 (58.8)	63.3 (61.7)	61.9 (39.7)	28.1 (14.7)
Total Cure Rate	--	39.2	6.6	38.6	50.5