

FIELD TRIAL ON THE TREATMENT OF FASCIOLOPSIASIS WITH PRAZIQUANTEL

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INTRODUCTION

The giant intestinal fluke, *Fasciolopsis buski*, is endemic where there is pig farming, where water plants are eaten raw or poorly cooked and where there are suitable snail intermediate hosts. In Central Thailand children often eat fresh water caltrop (*Trapa natans*) on their way to and from school and become infected with the parasite. Various anthelmintics such as a local fruit maklua (*Diospyros mollis*), tetrachloroethylene (Saovakontha *et al.*, 1965, Manning *et al.*, 1969) and niclosamide (Suntharasamai *et al.*, 1974) have been used in the treatment of the parasite. More recently during praziquantel clinical trials on opisthorchiasis viverrini, intestinal as well as other liver flukes were recovered from the feces (Bunnag and Harinasuta, 1980, 1981). As a result of these findings, the following studies were carried out to determine the efficacy of praziquantel in the treatment of fasciolopsiasis.

MATERIALS AND METHODS

The study was carried out at Wat Lard Chado Primary School in Pak Hai District, Ayudhaya Province, Central Thailand. The area consists of a central plain with paddy fields, lakes, water plants and pig farms. The school enrollment was 1104 and of these 816 (73.9%) students submitted stool specimens during the pre-treatment survey. The stools were examined microscopically by the direct smear method and *F. buski* eggs were detected in the feces of 85 (10.4%). The infected

students appeared healthy and consisted of 33 males and 52 females, 7 to 13 years of age; their weights ranged from 13 to 43 kg.

The children were given praziquantel in a single randomized dose of either 15 mg (29 students), 25 mg (28 students) or 40 mg/kg (28 students) body weight after lunch. The children were requested to submit all feces passed on the day of treatment and the next day after treatment and the stools were examined for adult worms. Follow-up stool examinations were also made on 14, 28 and 56 days but 13 students failed to submit follow-up stools until 70 days post-treatment. Each follow-up stool specimen was examined twice by a concentration method.

Side effects caused by the drug were determined during the first three hours after treatment and the following day.

RESULTS

Feces from the 85 treated students were examined for *F. buski* eggs for follow-up examinations; 27 students submitted 3 specimens, 31 submitted 2 specimens and 27 one specimen. All specimens were negative for *F. buski* eggs.

To determine adverse effects to the drug, all students were initially interviewed individually, but were later questioned as a group. Students (13) receiving the 40 mg dose of praziquantel had more side effects than those receiving 25 mg (8) and 15 mg (6). Headache, dizziness, nausea and sleepiness occurred in 10-18% while abdominal discomfort, epigas-

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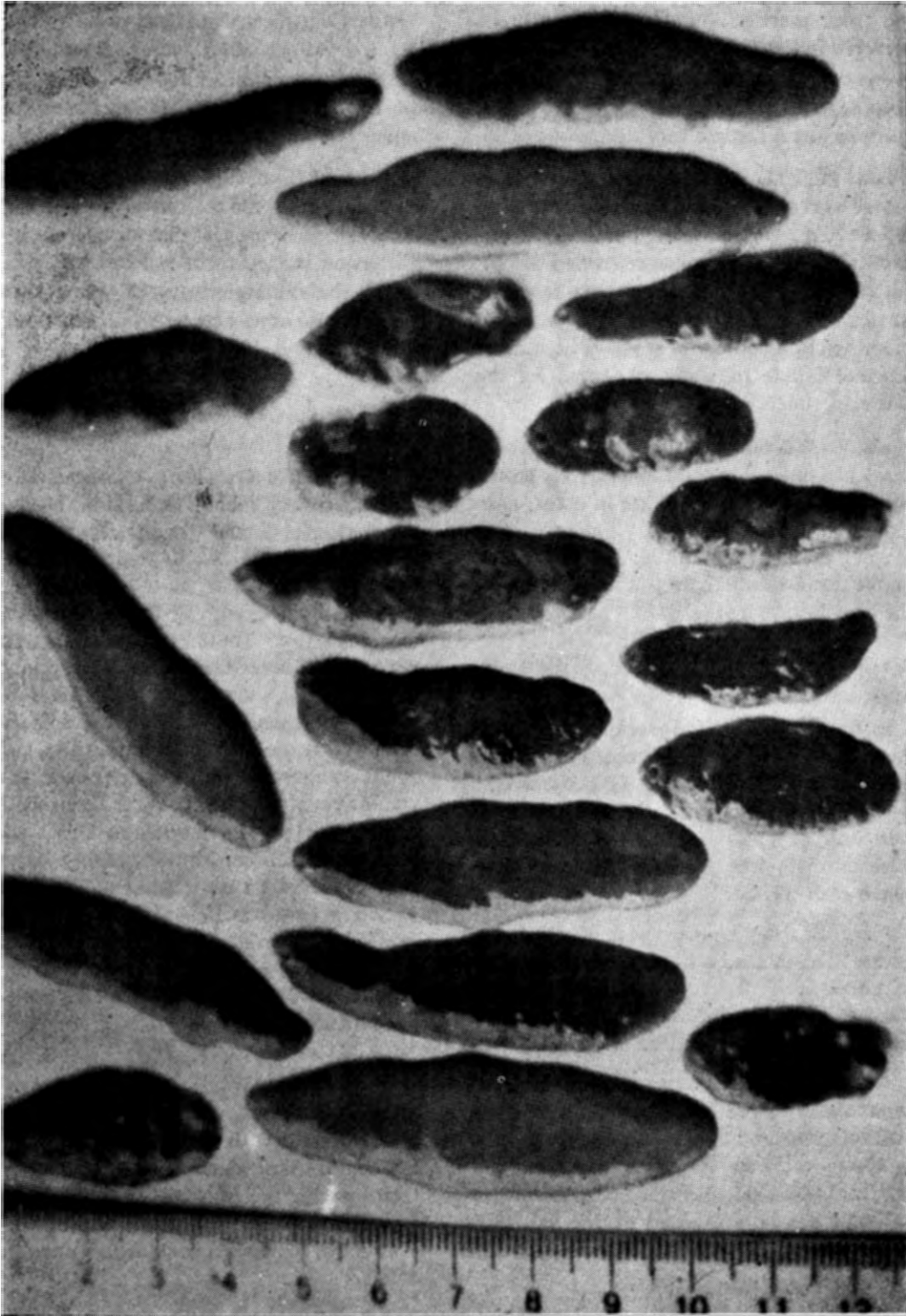


Fig. 1—*Fasciolopsis buski* adult worms recovered from the stool after treatment with Praziquantel. Note the blisters on the tegument of the worms.

tric pain, diarrhea, vomiting and lassitude occurred in less than 5 %. When questioned in a group, 46 students reported experiencing sleepiness, 7 reported waking late in the morning and 4 became very sleepy.

Sixty students provided stool specimens in plastic bags on day 0 and day 1 and a total of 287 *F. buski* were recovered from 30 specimens. The greatest number recovered was 47, but most students passed only one to a few worms. The entire stool output was not submitted by a number of students because of parental failure to realize the need for the entire specimen.

More than one half of the worms were fleshy and pinkish in color and actively motile while the rest were chocolate in color, non-motile and presumed dead. Small to large blisters, up to 15 mm in diameter, were seen on the tegument of the worms and several of the blisters ruptured (Fig. 1).

DISCUSSION

In the present study, praziquantel gave a cure rate of 100% in single oral doses of 15 mg, 25 mg and 40 mg per kg body weight whereas in a previous studies the cure rates were only 12% and 77% for niclosamide and tetrachloroethylene respectively (Suntharasamai *et al*, 1974).

Since all drug regimens were effective, the authors recommend a single dose of 15 mg/kg of praziquantel for future use in the treatment of this infection, and to minimize the side effects the drug be given at bed time.

Although side effects were experienced by some of the school children, they were mild and transient and occurred most frequently in those receiving the higher dosages. A number of the students experienced sleepiness and this can be attributed to the fact that praziquantel is an analogue of a tranquilizer/hypnotic.

All of the infected students admitted to the habit of eating water plants, especially the stems of water lily. Fifty-two students also ate fresh water caltrop, 48 consumed fresh watercress and 9 ate fresh morning glory.

Although the definitive action of praziquantel on the fluke and the causes of death is not known it is suggested that development of blisters on the tegument had some effect and led to the ultimate death of the parasite. This has also been observed with other flukes (Melhorn *et al.*, 1983).

SUMMARY

Eighty-five of 816 (10.7%) students attending a primary school in Central Thailand were examined and found infected with *Fasciolopsis buski*. All of students ate fresh water lily stems and most ate other fresh water plants including caltrop, water cress and morning glory. The 85 students were given praziquantel in randomized single doses of 15, 25 or 40 mg/kg body weight. Side effects were mild and transient and consisted of headache, dizziness, nausea, sleepiness, abdominal discomfort, anorexia, diarrhea, epigastric pain, vomiting and lassitude. Those receiving the highest dosages had more side effects than students in the other 2 groups. Large blisters were observed on the tegument of *F. buski* passed in feces and this was believed to be caused by the drug. The authors recommend a single dose of praziquantel in a dosage of 15 mg/kg of body weight for the treatment of the parasitosis.

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