

# EFFICACY OF MULTIPLE DOSE MEBENDAZOLE AGAINST TRICHURIASIS IN THAI AND KAREN PATIENTS

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**Abstract.** Treatment of trichuriasis with mebendazole 500 mg for three days, and 100 mg twice daily for three days, yielded cure rates of 93.9 and 88.9% in Thai patients, while the cure rates in Karen patients were 96.2 and 95.5% respectively. The total number of Thai and Karen trichuriasis patients were 60 and 48, when tested by modified cellophane thick smear Kato-Katz technique. There were no significant differences among the two groups of patients and doses of treatment ( $p > 0.05$ ).

## INTRODUCTION

Soil-transmitted helminthiasis (STH) is still the world's most abundant helminthic infection, despite extensive control programs and highly effective anthelmintic drugs. In Thailand, the disease is widespread in rural areas, especially in the southern part of the country. The prevalence in 14 provinces in the south of Thailand was hookworm (49.1%), *Trichuris trichiura* (24.4%), and *Ascaris lumbricoides* (5.9%) (Jongsuksuntigul, 1991). In 1993, Muennoo *et al* (1993) reported that the prevalence of hookworm infection, trichuriasis and ascariasis in primary school children in Nakhon Si Thammarat Province of southern Thailand was 75.5%, 37.2% and 15.8% respectively and the re-infection rates determined eight months post-treatment were 82%, 78.8% and 63.3% respectively.

Trichuriasis shows resistance to anthelmintic drugs; a single dose of 400 mg albendazole gave a cure rate of 30% in light infection and over three consecutive days in all intensities of trichuriasis gave a 40% cure rate (Waikagul *et al*, 1994). Setasuban *et al*, (1993) reported that a single dose of albendazole 400mg gave a cure rate of 77% for trichuriasis and dosage over three consecutive days gave a higher result at 91.6%. Anantaphruti *et al*, (1993) reported that multiple doses of albendazole were less effective than multiple doses of mebendazole against trichuriasis with cure rates of 68.2 and 71.4% in light infection. Muennoo *et al*, (1999) reported that a single dose of 400 mg albendazole and 500 mg mebendazole in the treatment trichuriasis gave cure rates of 32.7 and 28.3% respectively, while Rahman (1966) in Malaysia, found that albendazole and mebendazole 400 mg as a single dose in the treatment of trichuriasis gave

cure rates of 83.4 and 89% respectively. The previous results showed that multiple doses gave higher cure rates than single doses in the treatment of trichuriasis and that differences in nationality may affect the efficacy of drugs.

In this study, a 500 mg mebendazole tablet each day for three consecutive days was compared with the conventional regimens of 100 mg twice daily for three consecutive days, to see whether the higher doses would give higher cure rates in the treatment of trichuriasis. Both regimens were used in treating Thai patients in Nakhon Si Thammarat and in Karen patients in Kanchanaburi Province, Thailand.

## MATERIALS AND METHODS

The study was carried out from November 1998 to October 1999. Kato-Katz technique stool examinations were conducted with Thai people in Nakhon Si Thammarat Province and with Karen people in Kanchanaburi Province, screening for hookworm, *T. trichiura*, and *A. lumbricoides* (Katz, 1972). The selected 85 Thai and 48 Karen came from those whose stools were positive for *T. trichiura* eggs at light and moderate intensity (WHO Expert Committee, 1987). The ages of the patients from both provinces ranged between 9-65 years. They were divided into two groups; 54 Thais and 27 Karens in Group 1 were treated with mebendazole as a 500 mg each tablet for three consecutive days. In Group 2, 31 Thais and 21 Karens were treated with a mebendazole 100 mg tablet twice daily for three consecutive days. Twenty-one days after treatment, all patients were subjected to Kato-Katz stool examination again. No patient selected in the

study had received any anthelmintic drugs during the six months prior to this study. The cure rate (CR) was judged to be the number of stool negative cases 21 days post-treatment and the egg reduction rate (ERR) was the number of eggs pre-treatment minus the eggs post-treatment after 21 days, divided by pre-treatment eggs x 100. Statistical analysis was done by Fisher's exact test.

## RESULTS

Results of the cross-sectional study on the prevalence and intensities of STH are reported in Table 1. As for the prevalence of STH in Nakhon Si Thammarat, of 261 stool examinations of Thais, 131 were positive (50.2%), which were composed of *T. trichiura* 85 (32.5%), hookworm 50 (19.1%), *A. lumbricoides* 27 (10.3%). The intensities were mild and moderate infections. Out of 401 stool examinations in Kanchanaburi, 141 cases (35.1%) were positive for parasites, which were comprised of hookworm 92 (23%), *T. trichiura* 45 (11.2%), *A. lumbricoides* 35 (8.7%), intestinal flukes 8 (2%), *Taenia* sp 2 (0.5%), and *Enterobius vermicularis* 1 (0.3%) (Table 1).

Treatment with mebendazole 500 mg for three days was carried out with 33 Thai patients and 27 Karen patients (Table 2). The cure rates in light infection were 93.9 and 96.2% and ERR were 94.7 and 98.8% respectively. No significant difference ( $p > 0.05$ ) by Fisher's exact test. Treatment with mebendazole 100 mg twice daily for three days in 27 Thais and 21 Karens gave CR of 88.9 and 95.5% respectively and the ERR were 93.3 and 98.5% respectively, with no significant difference ( $p > 0.05$ ).

Side effects of mebendazole were found in the 500mg/day for three days treatment group - nausea, dizziness and weakness in three adults and one 12 year-old girl; meanwhile, no side effect was found in the mebendazole 100 mg twice daily for three days group.

## DISCUSSION

The cross-sectional prevalence of STH in Nakhon Si Thammarat is higher in number and intensity than in Kanchanaburi Province because the humidity, temperature and shaded environment in the south of Thailand are suitable to the fertility of STH. The results of treatment with mebendazole 500 mg for three days in Karen people gave high efficacy in light trichiuriasis with a CR 96.2%, while the efficacy in Thais was a CR of 93.9% with no significant difference ( $p > 0.05$ ) (Table 2).

Table 1  
The prevalence of parasitic infections in Nakhon Si Thammarat and Kanchanaburi Provinces.

	Nakhon Si Thammarat 256	Kanchanaburi 401
No. of examinations		
Parasitic infections	131 (50.5%)	141 (35.1%)
<i>Trichuris trichiura</i>	85 (32.5%)	48 (11.9%)
<i>Necator americanus</i>	50 (19.1%)	92 (22.9%)
<i>Ascaris lumbricoides</i>	27 (10.3%)	35 (8.7%)
Intestinal flukes	—	8 (1.9%)
<i>Taenia</i> sp	—	2 (0.5%)
<i>Enterobius vermicularis</i>	—	1 (0.2%)
<i>Hymenolepis nana</i>	1 (0.4%)	—

Table 2  
Comparison of 500 mg mebendazole for three days and 100 mg twice daily for three days in treatment of light trichiuriasis.

	No. of patients	No. cured	Cure rate (%)	Egg reduction rate (%)
500 mg x 3 days				
in Thais	33	30	93.9	94.7
in Karens	27	26	96.2	98.8
100 mg x 2 x 3 days				
in Thais	27	24	88.9	93.3
in Karens	21	20	95.5	98.5

The mebendazole 100 mg twice daily for three days treatment gave a cure rate at light trichuriasis of 95.5% in Karen people and 88.9% in Thais. The previous treatment with 100 mg mebendazole twice daily for three days gave an 82.6% cure rate (Bundy *et al*, 1985), a 71.4% cure rate (Anantaphruti *et al*, 1993), and an 85.5% cure rate (Charoenlarp *et al*, 1993) in light trichuriasis. The results of 100 mg twice daily for three days in the Karen are higher than with previous treatment. The efficacy of high doses (500 mg for three days in light infection of trichuriasis in this study) gave a higher cure rate than the 100 mg twice daily for three days treatment which was conducted at Nakhon Si Thammarat by Anantaphruti *et al* (1993). No correlation between race and treatment in this study was found. In comparing mebendazole 500 mg for three days and 100 mg twice daily for three consecutive days, efficacy is not markedly different, but the administration of mass treatment is more convenient and gives mild side effects. It is, therefore, recommended that 500 mg mebendazole for three days be used as the drug treatment of choice in the treatment of trichinosis and other STH.

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