# The efficacy of albendazole (400 mg) against Soil-transmitted helminthiasis in Belgium (Flanders):

A ParaDesign drug efficacy report

by Ghent University

ParaDrug was developped by Ghent University (Belgium). The development of ParaDesign was financially developped by a Bill and Melinda Gates Foundation Grant
www.starworms.org

## Contents



# 1 Background

Schistosomiasis (*Schistosoma haematobium*, *S. mansoni*, *S. japonicum*) and *S. mekongi*) and soil-transmitted helmintiasis (STH), including roundworms (*Ascaris lumbricoides*), whipworms (*Trichuris trichiura*), hookworms (*Ancylostoma duodenale* and *Necator americanus*) are among the most prevalent neglected tropical diseases. To fight against these worms, large-scale deworming programs are implemented in which anthelmintic drugs are administered. These pledges of drug donations are at place, but this world wide upscale of deworming programs also creates the need for thoroughly designed monitoring systems that allow detection of any changes in anthelmintic drug efficacy that may arise through the evolution of anthelmintic drug resistance in these worms. This is in particular when there is a paucity of anthelmintic drugs licensed for the treatment of worm infections in humans. Therefore, the WHO has recently developped guidelines on how to assess drug efficacy of anthelmnthic drugs used against schistosomiasis and soil-transmitted helminthiasis. This document reports the results of a trial designed to assess the efficacy of Belgium against Soil-transmitted helminthiasis in Belgium (Flanders). The raw data were uploaded by Ghent University at ParaDesign, which subsequently genenerated this customized drug efficacy report. ParaDesign was developped by Ghent University. The development of ParaDesign was financially supported by the Bill and Melinda Gates Foundation.

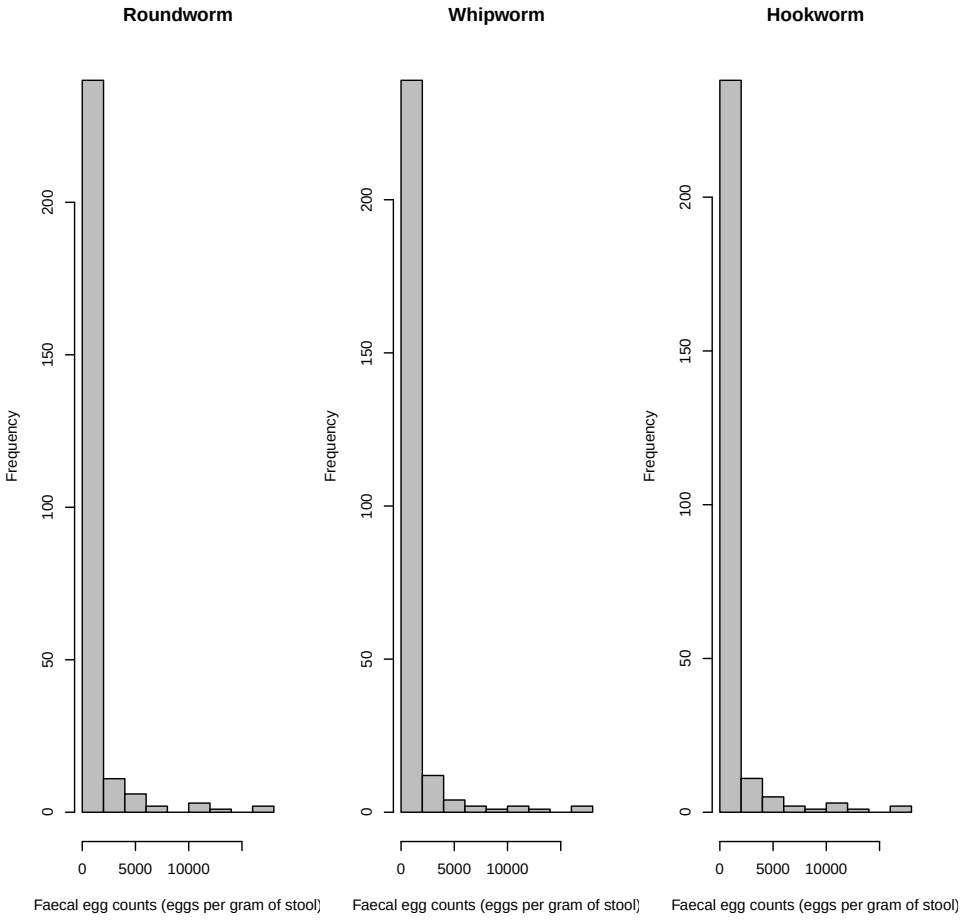
# 2 Results

## 2.1 Number of subjects

In total, 500 subjects enrolled this drug efficacy trial. Roundworm infections were observed in 294 subjects (58.8 percent), whipworm infections in 294 cases (58.8 percent) and hookworms in 294 (58.8 percent). Mixed STH infections were observed in 310 subjects (62 percent). In total, 449 infected subjects provided a sample at both baseline and follow-up, including 265 cases of roundworms, 263 cases of whipworms, and 263 cases of hookworms.

## 2.2 Intensity of infections

The distribution of the baseline egg counts across the subjects who completed the trial are illustrated in the figures below. The mean (25th quantile; 75th quantile) roundworm egg counts equalled 848.3 (10;756) eggs per gram of stool. The mean whipworm egg counts equalled 814.7 (8.5;717) eggs per gram of stool. The mean hookworm egg counts equalled 863.4 (9;754.5) eggs per gram of stool. Low, moderate and heavy intensity roundworm infections were observed in 208 (78.5percent), 51 (19.2 percent) and 6 (2.3 percent) cases, respectively. For whipworms, these numbers were 210 (79.8 percent), 44 (16.7 percent) and 9 (3.4 percent), respectively. For hookwworms, these numbers were 238 (90.5 percent), 11 (4.2 percent) and 14 (2.8 percent), respectively.



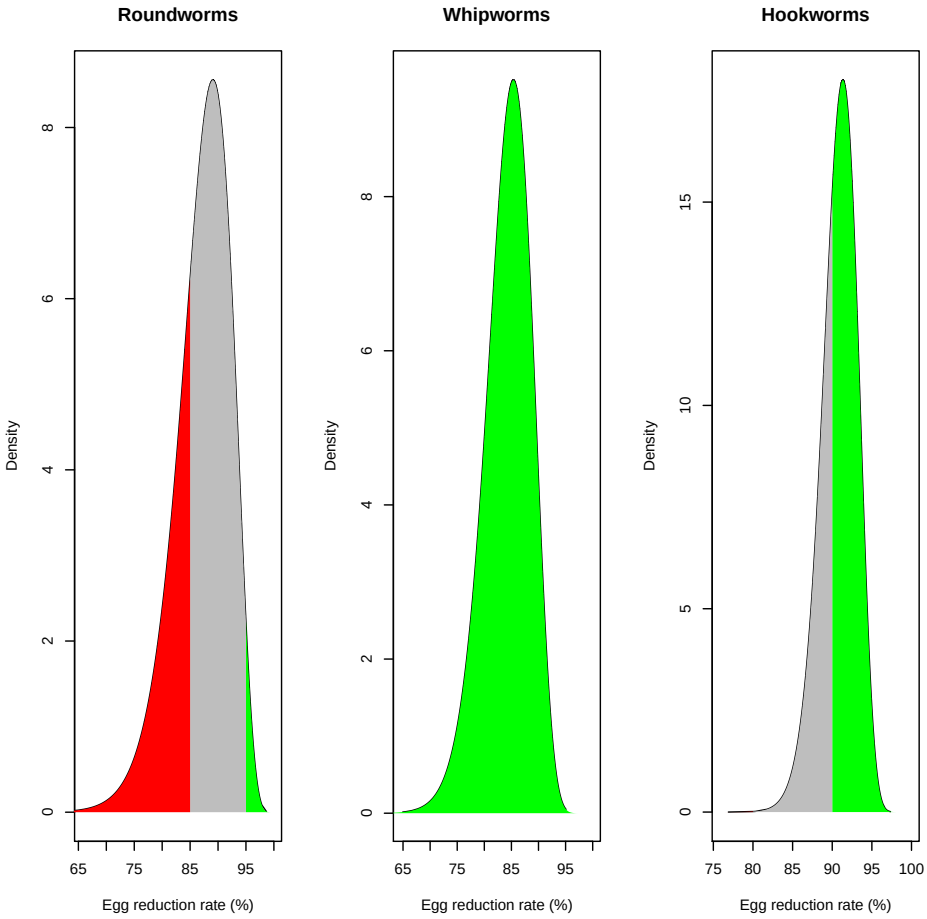

## 2.3 Follow-up period

The follow-up period ranged from7 to 34days, with a median of 17. In 388 out of 449 (86.4 percent) complete cases the follow-up period ranged from 7 to 21 days.

## 2.4 Egg reduction rate

The egg reduction rate (95 percent confidence intervals) of the intervention against roundworms equalled 87.1 percent (75.7; 95). For whipworms, the egg reduction rate equalled 84.2 percent (74.6; 91.5). For hookworms, the egg reduction rate equalled 90.8 percent (85.8; 94.7). The figures below classify the egg reduction rate estimates according to the WHO thresholds

(WHO, 2013). Any value in the green zone indicates that the efficacy of the drug is satisfactory, any value in the grey zone indicates that the drug is doubtful and any value in the red zone indicates that the drug is reduced. .




## 3 Conclusions

The efficacy of the administered drug is satisfactory against both whip- and hookworm infections, but is below the expected efficacy for roundworm infections (less than 95 percent). Please contact World Health Organization (wormcontrol@who.int or Dr. A. Montresor (montresora@who.int)) and its collaborating centre for the monitoring of anthelminthic drug efficacy for soil-transmitted helminthiasis (Dr. B. Levecke: bruno.levecke@ugent.be) to discuss further actions.