

# Comparative Evaluation of Anthelmintic Effects of Crude and Fractionated Extracts of *Holoptelea grandis* (Hutch.) Mildbr. [Ulmaceae]

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## 1. INTRODUCTION

Soil-transmitted helminths (STH) affect around 2 billion people globally, mainly in tropical and subtropical regions, causing significant health and economic issues, particularly in developing countries (1).

In Ghana, 42.9% of school children are impacted, affecting their growth. Efforts to control STH include hygiene education, sanitation improvements, and anthelmintic drugs, but face challenges like drug resistance and reinfections.

There is growing interest in natural treatments, such as *Holoptelea grandis*, a tree from tropical Africa traditionally used for parasitic infections.

This study aims to scientifically validate its use as a vermifuge or vermicide for intestinal worms and explore it as an alternative to synthetic anthelmintics (3).

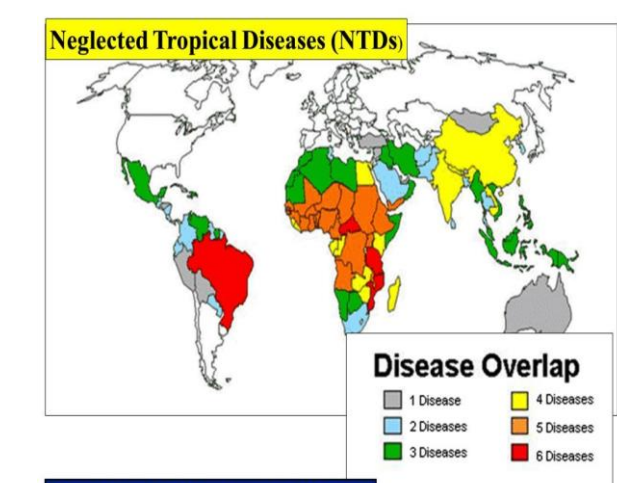


**Figure 1:** Map of Countries Affected by NTDs

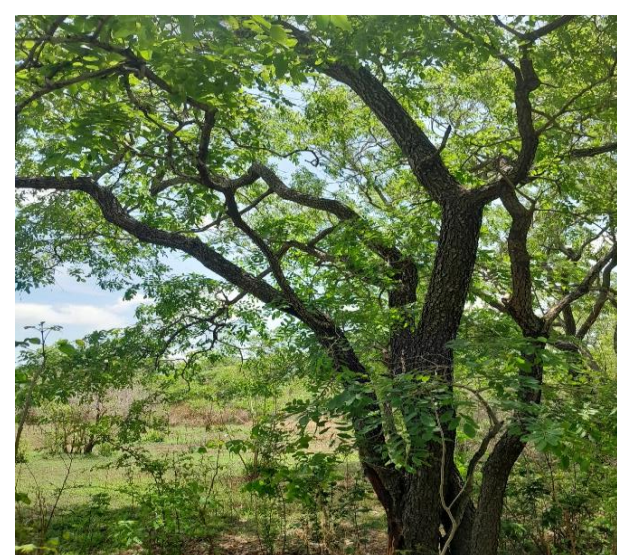
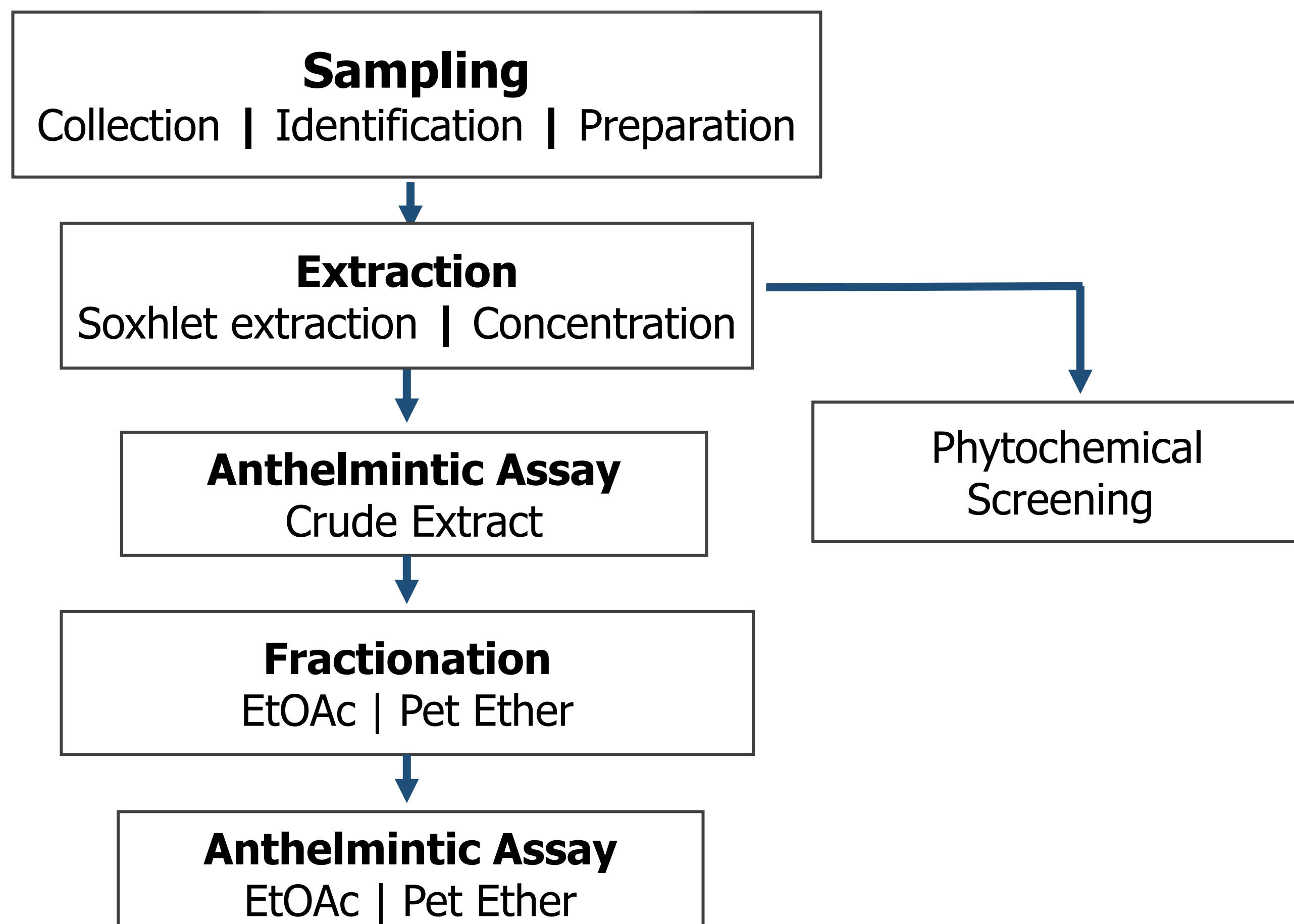


**Figure 2:** Picture of *Holoptelea grandis*

## 2. METHOD



**Scheme 1:** Methodology for Study

## 3. RESULTS

### A. Plant Info

**Table 1:** Botanical name, family name, local name, part used and local indication

|                           |                                               |
|---------------------------|-----------------------------------------------|
| Botanical and Family name | <i>Holoptelea grandis</i> ;<br>Ulmaceae       |
| Local name                | Nakwa                                         |
| Plant part used           | Stem bark                                     |
| Solvent Used              | Ethanol                                       |
| Local indication          | Laxative, arthritic, rheumatism and vermifuge |
| Physical State            | Brown Crystal                                 |
| Yield (%)                 | 23.5                                          |

### B. Phytochemical Screening

**Table 2:** Phytochemical constituents of *H. grandis* ethanolic crude extract

| Phytochemical Class | Results |
|---------------------|---------|
| Tannins             | +       |
| Saponins            | +       |
| Reducing Sugars     | +       |
| Alkaloids           | +       |
| Flavonoids          | +       |
| Coumarins           | -       |
| Triterpenoids       | +       |

(+) = detected; (-) = not detected

### Anthelmintic Assay

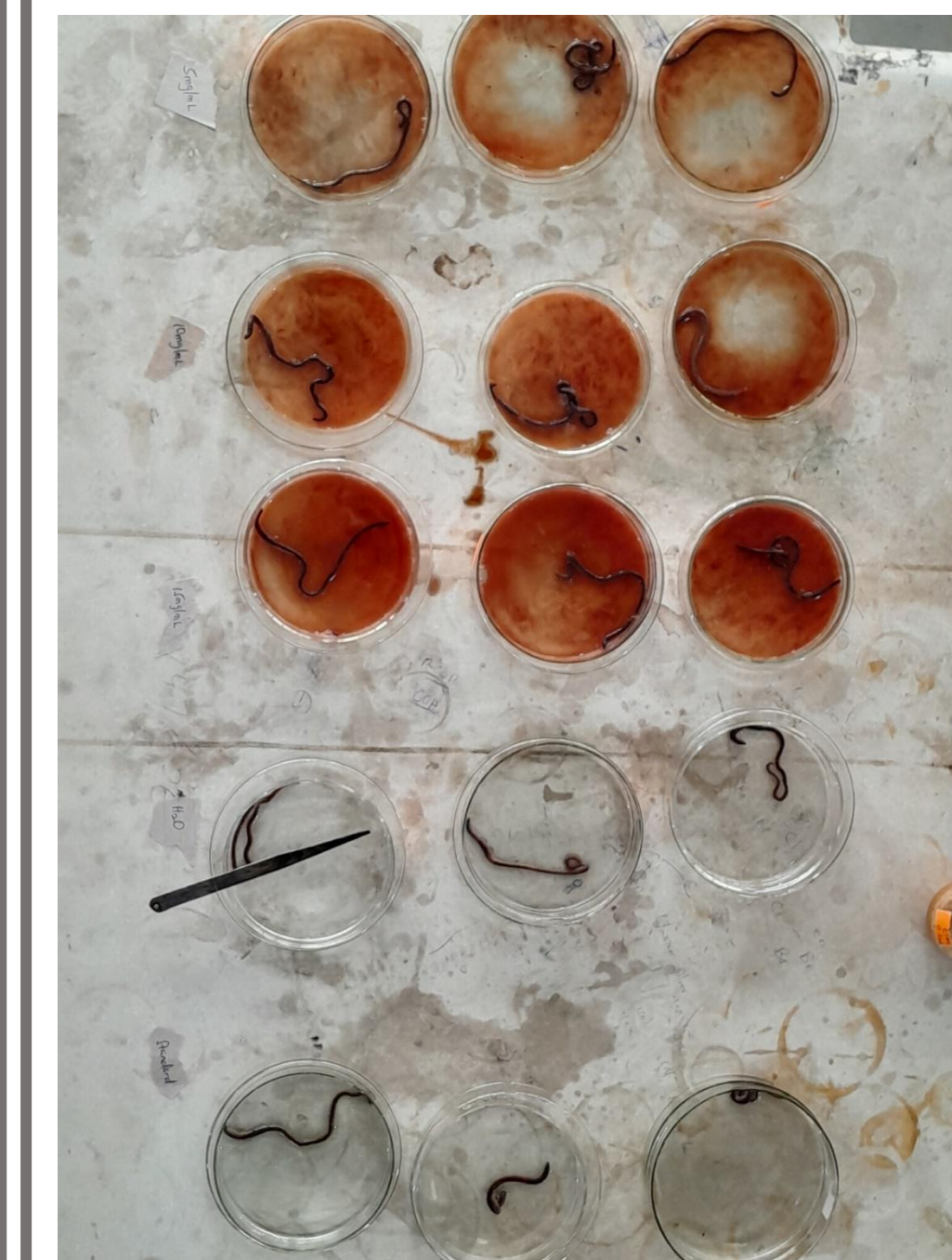


**Fig. 3** Testing of the Effectiveness of Extracts against the Worms



**Fig. 4** Death of Worms

## 4. DISCUSSION

The phytochemical analysis of the crude extract indicated the presence of tannins among other chemical constituents.

Tannins are known to exhibit anthelmintic activities, as they can bind to free proteins in the gastrointestinal tract of the host animal or to glycoproteins on the cuticle of the parasite, ultimately leading to their death.

## 5. CONCLUSION

The ethyl acetate fraction showed the strongest activity, inducing paralysis at 61, 27, and 15 minutes and death at 360, 99, and 75 minutes across the tested concentrations.

These effects were more pronounced than those of the crude extract or petroleum ether fraction.

It would be intriguing to determine the active component responsible for the anthelmintic effects and to investigate its additional pharmacological actions.

## REFERENCES

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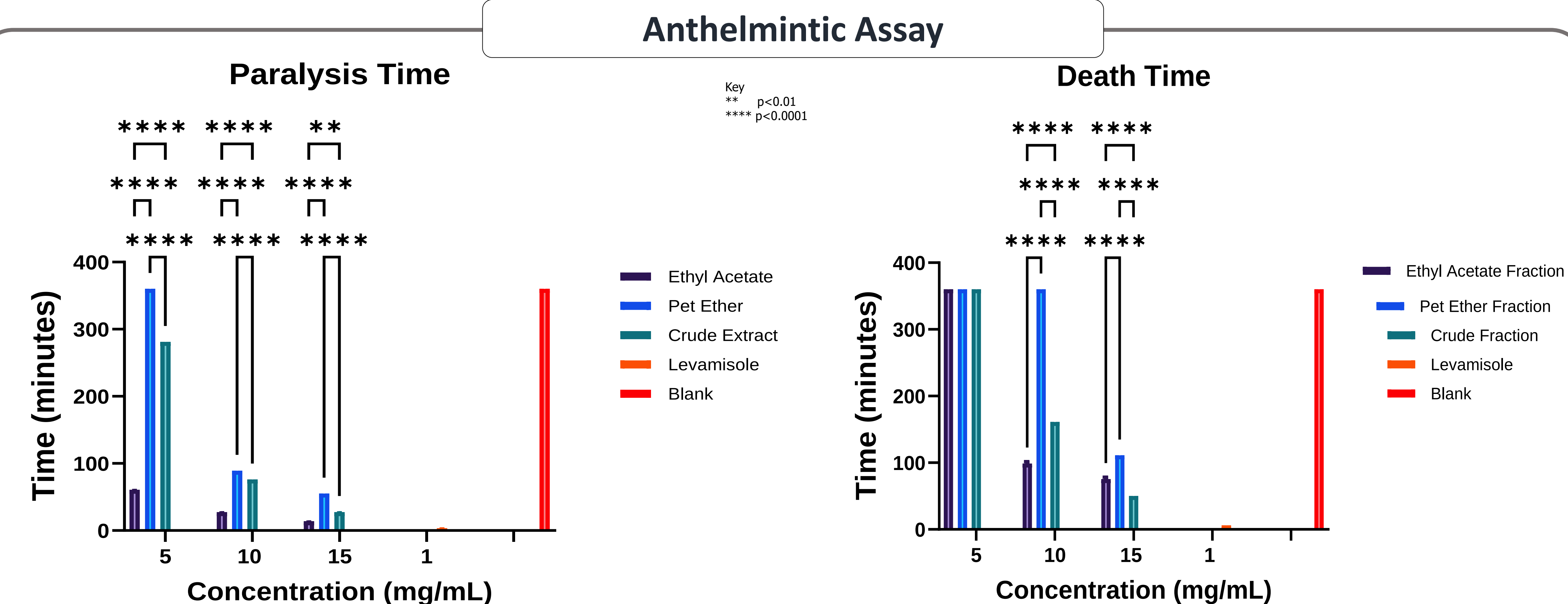


**Fig. 6** Duration of Paralysis and Death Induced by the Crude Extract, Ethyl Acetate, Petroleum Ether, and Levamisole