

In vitro Effect of aqueous extracts from mangosteen rind (*Garcinia mangostana*) on mortality rate of the minute intestinal fluke, *Stellantchasmus* spp.

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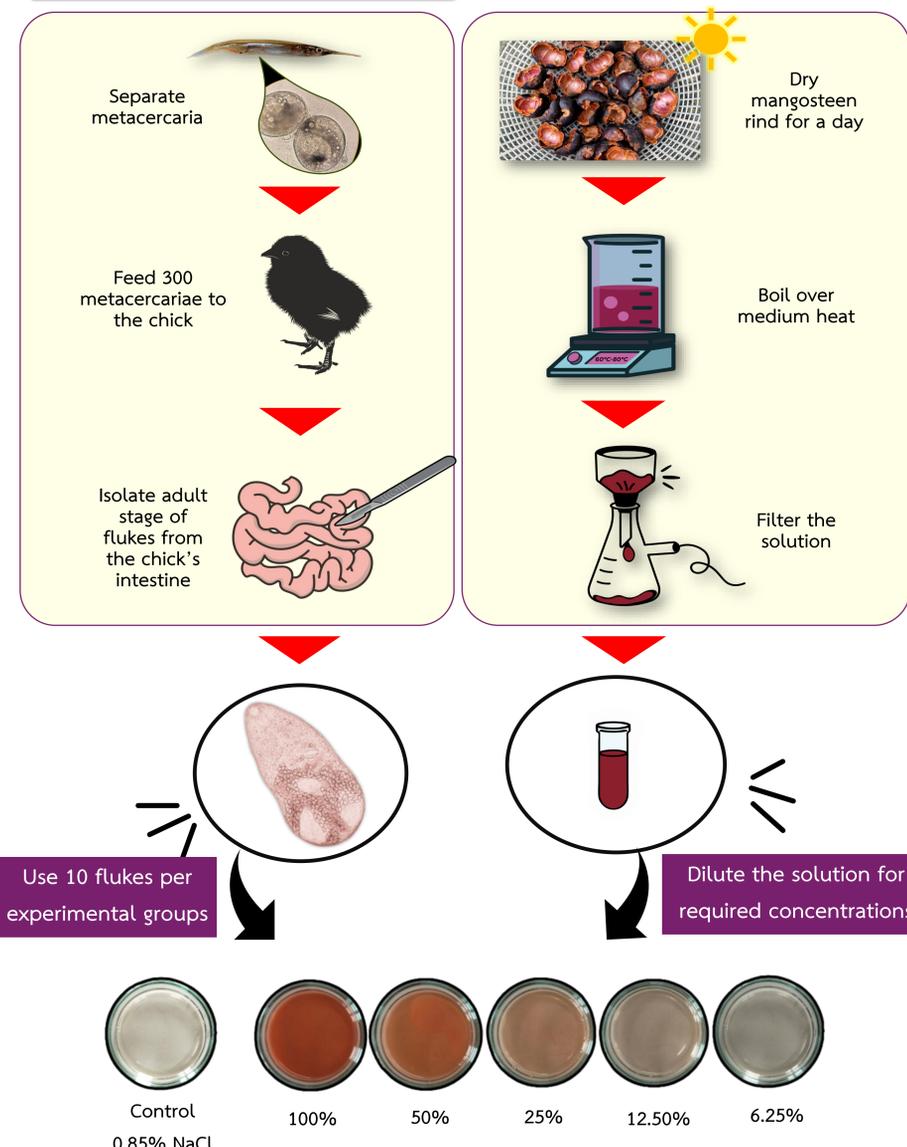
Abstract

Stellantchasmus spp. is an intestinal fluke in the family Heterophyidae. It is commonly found in northern and central Thailand. It is the causative agent of heterophyiasis. Currently, synthetic drugs such as praziquantel are used for treatment but there still are some consequences in particular patients. So, herbal remedies are becoming an alternative treatment option. In this study, metacercariae of *Stellantchasmus* spp. were detected in wrestling halfbeak fish (*Dermogenys pusilla*) collected from the canal near Sala Tham, Chiang Mai University, between July 2024 to September 2024. The prevalence of infection was 100% (30/30). The intensity was 54.33 (8–161) metacercariae per a fish. The efficacy of aqueous extracts from mangosteen rind (*Garcinia mangostana*) on mortality of *Stellantchasmus* spp. adult stage was examined with the concentrations of 100%, 50%, 25%, 12.50%, and 6.25%, and used 0.85% NaCl solution as control. Mortality of flukes was observed and recorded using the movability Index (MI). The results showed that the highest concentration eliminating all flukes was 100% within 10 minutes. The lowest effective concentration elimination was 6.25% within 75 minutes, while the control group required 120 minutes to eliminate all flukes. In conclusion, the higher the mangosteen rind aqueous extract concentration, the better the mortality of *Stellantchasmus* spp. The result provides a foundation for further research in developing mangosteen rind as a component in antiparasitic medication.

Introduction

Minute Intestinal Flukes (MIFs) are parasites found in birds and mammals, including humans. Their life cycle requires two intermediate hosts: freshwater snails and freshwater fishes. Human infection typically occurs through the consumption of raw or undercooked fish, leading to symptoms of heterophyiasis such as abdominal pain, diarrhea, or severe complications. *Stellantchasmus* spp. is a common intestinal fluke in northern and central Thailand, with wrestling halfbeak fish as its intermediate host. Treatment for parasitic infections commonly involves praziquantel. However, there is increasing interest in herbal medicine that demonstrate fewer side effects, such as siamese cassia's root (Rukrowm, 2006), areca seed (Rakhangpetch, 2015) examined with *S. falcatus*. Mangosteen is an economic fruit in Thailand. It has a rind that has been traditionally utilized in herbal medicine. Therefore, this study aims to investigate the efficacy of aqueous extracts from mangosteen rind on mortality rate of *Stellantchasmus* spp.

Material & Method



Record the results to calculate the *Movability Index (Wongsawad, 2004).

Result

Prevalence and Intensity of metacercaria in wrestling halfbeak fish

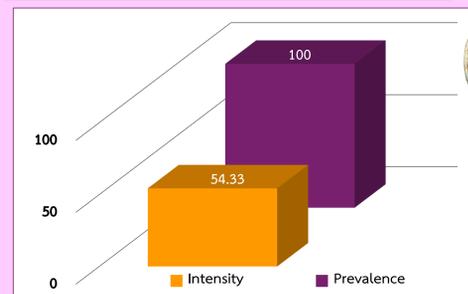


Figure1: The diagram of prevalence and intensity of *Stellantchasmus* spp. metacercaria in wrestling halfbeak fish.

*Movability index; MI (Wongsawad, 2004)

- 3 = The parasite moves > 10 times in 10 seconds
- 2 = The parasite moves 6-10 times in 10 seconds
- 1 = The parasite moves 1-5 times in 10 seconds
- 0 = The parasite remains motionless or dies.

The efficacy of aqueous extracts from mangosteen rind on mortality rate of flukes

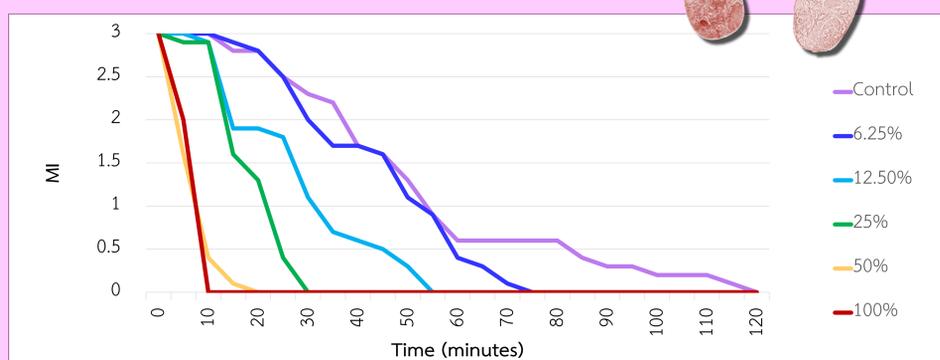


Figure2: Movability index at different time intervals of each concentration.

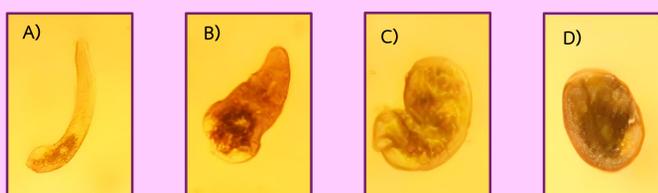


Figure3: The movement of fluke at different scores.

- A) 3 score
- B) 2 score
- C) 1 score
- D) 0 score

Conclusion

A study was conducted to detect the metacercarial stage of *Stellantchasmus* spp. in 30 wrestling halfbeak fishes (*Dermogenys pusilla*) collected from the canal at Sala Tham, Chiang Mai University. The prevalence value was found to be 100%, with mean intensity of 54.33 (range: 8–161) per fish.

The result from examination, at concentrations of 100%, 50%, 25%, 12.5%, and 6.25%, all parasites died within 10, 20, 30, 55, and 75 minutes, respectively. In contrast, the control group using 0.85% NaCl solution resulted in complete parasite death within 120 minutes (2 hours). Dead parasites exhibited shrinkage, dehydration, and coiling into an oval shape. Therefore, the mortality rate of *Stellantchasmus* spp. increases with higher concentrations of aqueous extracts from mangosteen rind. However, other factors such as temperature, extraction method, mangosteen peel type, solvents, and parasite species may also influence the results.

Acknowledgement

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Reference

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