Larval Helminth Infection in Freshwater Snails from Wiang Pa Pao District, Chiang Rai Province

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Abstract

Snails were collected from four sites between July and December 2025. The result showed that the overall prevalence of larval helminth infection was 19%. Two hundred seventy-nine snails were classified into 10 species. The identified larval helminths were categorized into six larval trematodes and one larval nematode. The prevalence of each larval helminth was as follows: xiphidiocercariae (32.65%), megarulouscercariae (25%), echinostome metacercariae with 37 collar spines (23.87%), echinostome metacercariae with 43 collar spines (37.33%), echinostome metacercariae with 47 collar spines (29.65%), *Thapariella* metacercariae (31.91%), *Opisthorchis*-like metacercariae (42.22%), unidentified metacercaria (7.14%) and unidentified larval nematode (7.14%). The findings suggest that freshwater snails in the research area serve as significant intermediate hosts for trematodes, possibly endangering human and animal health.

Introduction

Freshwater snails are important components of aquatic ecosystems, but some species act as intermediate hosts of trematode parasites that can infect humans. In the life cycle of trematode, snails such as *Indoplanorbis* and *Bithynia* act as the first intermediate host, where parasites develop into cercariae. These larvae then infect second intermediate hosts, including *Bithynia siamensis* and *Filopaludina martensi*, and develop into metacercariae, the infective stage for humans.

Objectives

The objectives of this study aims to investigate the prevalence and intensity of larval helminths in freshwater snails from Wiang Pa Pao District, Chiang Rai Province, and to identify parasite species based on morphological characteristics using a light microscope.

Methodology



Discussion and Conclusion

The study found that freshwater snails in Wiang Pa Pao District, Chiang Rai Province were infected with several types of larval helminths, *Bithynia siamensis* showed the highest diversity of parasite infections, indicating its important role as an intermediate host in the life cycle of trematodes. These findings are consistent with previous studies reporting similar parasites in freshwater snails in Thailand and suggest that freshwater snails in this area may play a role in the transmission of parasitic diseases to animals and humans.

Results



Figure 1: Species of freshwater snail (A) *Pomacea canaliculata*, (B) *Filopaludina polygramma*, (C) *Filopaludina martensi*, (D) *Cipangpaludina annandalei*, (E) *Clea helena*, (F) *Melanoides tuberculata*, (G) *Radix auriculata*, (H) *Physella acuta*, (I) *Indoplanorbis exustus* and (J) *Bithynia siamensis*.

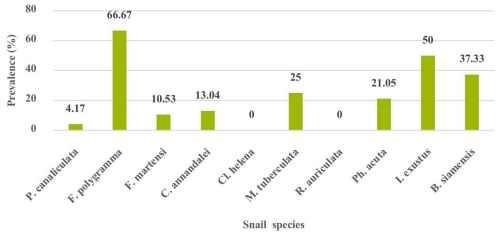


Figure 2: Prevalence of larval helminth infection in snails

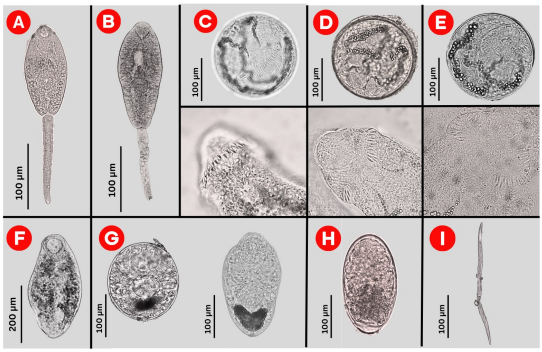


Figure 3: Morphology of larval helminths (A) Xiphidiocercariae, (B) Megarulouscercariae, (C) Echinostome metacercariae with 37 collar spines, (D) Echinostome metacercariae with 43 collar spines, (E) Echinostome metacercariae with 47 collar spines, (F) *Thapariella* metacercariae, (G) *Opisthorchis*-like metacercariae, (H) unidentified metacercariae and (I) unidentified larval nematode

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References

1. Chandler and Read, Introduction to Parasitology: With Special Reference to the Parasites of Man, (1961).
2. Chantima, K., Suk-ueng, K., & Kampan, M. Freshwater snail diversity in Mae Lao agricultural basin (Chiang Rai, Thailand) with a focus on larval trematode infections. Korean Journal of Parasitology, 2018, 56(3), 247–257.
3. Bush AO, Lafferty KD, Lotz JM, Shostak AW. Parasitology meets ecology on its own terms: Margolis et al. revisited. Journal of Parasitology, 1997, 83(4), 575–583.