

Thesis Title : Survey of *Angiostrongylus* spp. in snails
and rats in Northeast of Thailand

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Abstract

An epidemiological study of *Angiostrongylus* spp. in snail and rodent hosts was conducted to ascertain the presence of the parasite in the Northeast of Thailand. Five provinces in Northeast, were randomly chosen as the study areas, one from each province, based on a large pond with water available throughout the year. *Pila* spp. and *Achatina fulica* were sampled by 100 snails each and 40 wild rats from Ubolratchathani, Udonthani, Chaiyaphum, Khon Kaen and Kalasin. Determination of infection was done by digestion of the snail to recover *Angiostrongylus* larvae.

In addition some of collected third stage larvae were used to infect laboratory rats to produce adult

worms for species identification. The result revealed that the prevalence of *Angiostrongylus* infection in *Pila* snails was 0.80 % (n = 500). Only *Pila polita* from Ubolratchathani and Kalasin were found to be infected with the prevalence of 0.94 % while *Pila ampullacea* had no parasite.

Infection of *A. fulica* with *Angiostrongylus* were found in all five provinces with the prevalence of 36.4 %. The prevalences were 46 % in Chaiyaphum, 44 % in Ubolratchathani, 33 % in Kalasin, 30 % in Udonthani and 29% in Khon Kaen. Average worm burden of *Angiostrongylus* spp. in all provinces was 5 and the worm burden in each province were variable and difference between provinces was found.

Results from naturally caught rats showed that they consisted of 3 species namely *Rattus rattus*, *Rattus norvegicus* and *Bandicota indica*. The overall prevalence of *Angiostrongylus* in 272 rats in 5 provinces was 1.1 %. The prevalence rate in *R. norvegicus* and *B. indica* was 3.84 % (n = 52) and 1.44 % (n = 69) respectively while *R. rattus* had no infection. When considered by province, *Angiostrongylus* infection were found in rats only from Ubolratchathani, Udonthani and Khon Kaen. In Ubolratchathani and Khon Kaen province only *R. norvegicus* was found to be infected with the prevalence 2.77 % and 6.25 % respectively. For Udonthani the infection occurred only in *B. indica* with the prevalence of 11.11 %. All of the worms were *A. cantonensis*. The average intensity of adult *A. cantonensis* in those rats was relatively low, 1-8 worms/animal.

Identification of *Angiostrongylus* spp. from laboratory infection of rat indicated that *A. cantonensis* occurs in all five provinces and *A. malaysiensis* was also found in Khon Kaen province.

In conclusion this study demonstrated that the prevalence and intensity of *Angiostrongylus* spp. in *Pila* snail is comparatively low but much higher prevalence rates and intensity of infection were seen in *A. fulica*. This suggests important roles of *A. fulica* in maintenance of the parasite life cycle in natural environment.

Moreover *A. cantonensis* distributed in all of the five provinces in Northeast and *A. malaysiensis* for the first time, was discovered in this region of the country.