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POSTER presentation

Genetic variability analysis of dog heartworm infection phenotypes in *Aedes aetgypti* mosquitoes collected in Chiang Mai

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**Abstract:**

**Background/Objective:** Vector competence for dog heartworm is limited to certain mosquito species, and there are lineage and individual differences even within the same species of mosquitoes. In our previous studies, we successfully identified susceptible strains within the Liverpool strain of *Aedes aetgypti* mosquitoes, which exhibit high vector competence and produce a large number of infective larvae (L3), as well as resistant strains that do not possess vector competence and do not produce L3. Genetic analysis revealed that the low resistance phenotype for dog heartworm infection is inherited in a sex-dependent manner. Therefore, through phenotype-dependent mating experiments, we speculated that it would be possible to elucidate the mechanism of individual differences in mosquito vector competence for dog heartworm.

**Methods:** In this presentation, we report our attempt to genetically identify individual differences and phenotypes in mosquito vector competence for dog filariasis using field-collected *Ae. aegypti* mosquitoes. *Ae. aegypti* mosquitoes (CM4, CM7) were collected in Chiang Mai, Thailand.

**Results:** Analysis of dog heartworm infection phenotypes in these two strains revealed that CM4 is susceptible, while CM7 exhibits a mixed susceptibility-resistance phenotype. For CM7, selection and breeding were conducted based on the dog heartworm infection phenotype. As a result, we successfully separated the susceptible strain (CM7S) and the resistant strain (CM7R) from the CM7 population.

**Conclusion:** Thus, the phenomenon of sex-dependent inheritance of low resistance phenotype for dog heartworm infection in *Ae. aegypti* mosquitoes is preserved, and further analysis is expected to contribute to the control of filariasis, including dog heartworm, in the future.

**Keywords:** Heartworm, Mosquito, *Aedes aegypti*