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Innate Immune Responses to Infection by Nocturnally Subperiodic *Brugia malayi* in the synonymous mosquito species, *Anopheles lesteri* and *Anopheles paraliae* (Diptera: Culicidae)

Watcharatip Dedkhad^a, Lyric C Bartholomay^b, Bruce M Christensen^b, Kritsana Taai^a, Chayanit Hempolchom^a, Gi-Sik Min^c, Deepak Joshi^d and Atiporn Saeung^a^aDepartment of Parasitology, Faculty of Medicine, Chiang Mai University, Chiang Mai 50200, Thailand^bDepartment of Pathobiological Sciences, School of Veterinary Medicine, University of Wisconsin-Madison (UW), Madison, WI 53706, USA^cDepartment of Biological Sciences, Inha University, Incheon 402-751, South Korea^dDepartment of Microbiology and Molecular genetics, Michigan State University, East Lansing, MI 48824, USA

Human lymphatic filariasis (LF), commonly known as elephantiasis, is a mosquito-borne disease caused by three species of filarial nematode parasites; *Wuchereria bancrofti*, *Brugia malayi* and *Brugia timori*. An estimated 25 million men and over 15 million people worldwide suffer from genital disease and lymphedema, respectively. *Anopheles paraliae* has been reported recently as synonymous to *An. lesteri*. Interestingly, preliminary data on the susceptibility of these two conspecific species to nocturnally subperiodic (NSP) *B. malayi* revealed different vector competencies. Thus, this mosquitoes-parasite system serves as an interesting model for studying factors that influence the susceptibility of mosquito vectors to infection with *B. malayi* parasites. The level of susceptibility in *An. lesteri* and *An. paraliae* was determined by comparing with the control mosquito, *Aedes (Tanakaius) togoi*. The possibilities of introgression between high and low/moderate susceptible genes were investigated by cross-mating experiments (reciprocal crosses, back crosses and repeated back crosses). In addition, the immune response and mechanism involved in the susceptibility or refractory of these mosquitoes to *B. malayi* parasites were examined. In contrast to *An. lesteri*, the infection rate per infected mosquito in *An. paraliae* was statistically less significant than that in *Ae. togoi* in all experiments ($p < 0.05$). The results of introgressive study revealed that the *B. malayi*-susceptible genes could be introgressed from a high (*An. lesteri*) to low/moderate (*An. paraliae*) potential vector by increasing the susceptibility rates. Direct toxicity (degeneration), melanotic encapsulation and cell aggregation were involved in mosquito immune responses against the development of first stage filarial larvae in the thoracic muscles. Furthermore, all of the mosquito species were found to have three hemocyte types (prohemocytes, granulocytes and oenocytoid) that had cell-mediated immune responses in their hemolymph.

Biography

He studied Parasitology from Chiang Mai University, Thailand. And he is having experience in RNAi technique training in University of Wisconsin, USA. Presently he is working as Faculty of Medicine, Chiang Mai University, Thailand.

wd.dedkhad@gmail.com

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