Thesis Title Preliminary Survey and Experimental Studies of *Mesocyclops* spp. as Biological Control Agents of Dengue Vectors in a Rural Thai Community.

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ABSTRACT

During preliminary survey of copepods, it was found that copepods were present and could survive in artificial containers everywhere in the village. They accidentally came from artesian wells. The density of copepods in each type of containers depended on the availability of food sources and the frequency of copepods reintroduction from their natural sources.

In natural condition, copepods did not seem to exhibit the potential for *Aedes* larval control because the density was not high enough. Up to 83% of water containers where copepod density was more than 40 per container, the copepods could eliminate *Aedes* larvae.

The most common copepod species (>90%) found in this study was *Mesocyclops aspericornis* which could kill 99.25% to 100% of *Aedes* larvae up to the ratio of 1:4 (25 copepod : 100 larvae) in the laboratory. They were reared by using modified food formula and culture technique. In culture

medium that supplemented food was added, they grew up to 200 folds from one gravid female within two weeks. The nauplius stage could survive with bacterial film in the medium.

In the field experiment, *M. aspericornis* in indoor vases could rapidly reproduce during the 2nd to the 5th weeks after introduction, if there were enough food (protozoa, *Aedes* larvae). Then they would decline until stable during the 12th to the 14th weeks and could eliminate both *Aedes aegypti* and *Aedes albopictus* larvae. *Mesocyclops aspericornis* in outdoor vases could not survive after inoculation or reintroduction. There are many factors affecting their survival in outdoor such as heat from sunlight, heavy rainfall, etc. *Mesocyclops aspericornis* will be effective in controlling *Aedes* larvae outdoors if they are in big containers and have enough food.