

Thesis Title	Use of PCR to Determine Source of White Spot Viral Infections in The Black Tiger Prawn, <i>Penaeus monodon</i>
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ABSTRACT

White spot baculovirus (WSV) of the black tiger prawn, *Penaeus monodon*, is a recently discovered baculovirus disease which is currently the cause of very serious and wide spread losses in the shrimp industry in Thailand and in Asia. Crustaceans suspected as carriers of this virus were investigated, since they may bring the virus into shrimp farms and cause fatal infections in reared shrimp. Three crab species commonly found in shrimp rearing areas of Thailand were studied. These were *Sesarma sp.*, *Scyllaea serrata* and *Uca pugilator*. All were found able to transfer the disease to *P. monodon* via water while physically separated in aquarium cohabitation tests. The crabs were infected with WSV by injection and their infection was confirmed by normal histology and specific *in situ* DNA hybridization and PCR amplification. Transfer of the virus to the shrimp was monitored using

the same techniques at 12 hours intervals after cohabitation began. With *Uca pugilator*, WSV could be detected in the shrimp co-habitants by 24 hours using PCR amplification and by 60 hours using *in situ* hybridization or H&E staining. With *Scyllaea serrata*, the shrimp were positive for WSV by 36 hours using PCR and by 60 hours using DNA *in situ* hybridization or H&E staining. With *Sersarma*, they were positive by 48 hours using PCR and 72 hours using *in situ* hybridization or H&E staining. These laboratory studies demonstrated that crab carriers of WSV may pose a real threat to cultivated shrimp. However, the studies were carried out in containers of small volume and with relatively clean sea water when compared to a shrimp cultivation ponds. Pond-based studies are now needed to determine whether factors such as pond volume, pond water quality and shrimp and crab behavior can influence the rate and success of transfer.