

## Betanodavirus infection in marine fish aquaculture in Malaysia

### Abstract

Betanodavirus is known to cause mass mortality in many marine aquaculture fish species. In this study, we detected the virus in four different marine aquaculture fish species in Malaysia. These included humpback grouper (*Cromileptis altivelis*), brown marbled grouper (*Epinephelus fuscoguttatus*), Asian seabass (*Lateolabrax japonicus*) and golden pompano (*Trachinotus blochii*). Out of 246 fish specimens analyzed using RT-PCR, 60.98% detected infected by the virus. Histological pathological analysis showed extensive cell vacuolation in the brain and retina tissues of severely infected specimens. However, some of the fish specimens detected positive using RT-PCR did not exhibit cell vacuolation which indicate the carrier state of those specimens. The RT-PCR amplification method developed in this study was shown useful as biosecurity tool in monitoring Betanodavirus infection in aquaculture. Although the origin of Betanodavirus in Malaysia is difficult to ascertain, evidence showed that some infections may have been contributed by the importation of fish fingerlings from neighboring countries. Currently, effective treatment of the viral disease is still impossible hence strict biosecurity measures need to be carried out in order to control the spread of the virus in fish stocks. These can include enforcement of biosecurity check and quarantine of every batch of imported fish, the use of virus-free broodstocks in hatchery, and proper disposal of infected fish stocks. In addition, good aquaculture practices must be carried in aquaculture farms or fish nursery all the time.