

Grouper potential hit by disease

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KOTA KINABALU: Even when meat is plentiful, there is a preference for fish largely due to reasons such as cost, religious beliefs and health.

Among the popular fish species is the grouper, which has become one of the major aquaculture products in this region, thus, leading to an increase in grouper culture activities.

Unfortunately, the supply of groupers is far from meeting the high demand in local and international markets due to disease outbreaks, according to Asrazitah Razak, a post graduate student at the Borneo Marine Research Institute in Universiti Malaysia Sabah.

"These disease outbreaks have caused heavy losses to aquaculture because at the end of the day, the infected fish will die, leading to serious economic loss.

"Although the clinical signs of the diseases could be associated to viral infection, particularly by the family Iridoviridae, it was difficult to ascertain."

She was speaking at the International Annual Seminar on Marine Science and Aquaculture here, Wednesday, during her talk entitled 'Detection of Fish Iridovirus in Cultured Groupers in Sabah Using Nested PCR (Polymerase chain reaction) and DNA (deoxyribonucleic acid) Sequencing Methods'.

PCR is a method of amplifying specific sequences of DNA from a large complex mixture of DNA, and nested PCR means two pairs of PCR primers used for a single locus (location).

The seminar was organised by UMS in collaboration with the Kinki University of Japan, State Fisheries Department and the National Oceanography Directorate under the Ministry of Science, Technology and Innovation.

Explaining the meaning of fish Iridovirus she said: "It is a viral pathogen that comes from the family of iridoviridae which can be divided into five genera; Iridovirus, Chloriridovirus, Megalocytivirus, lymphocystivirus and Ranavirus.

"Both Iridovirus and Chloriridovirus commonly infect invertebrate species such as mosquitoes and larvae, while the other three commonly infect marine fish species," she explained.

Meanwhile, a total of 110 specimens of groupers were examined for iridovirus infection using nested PCR and DNA sequencing methods over several years since 2004.

The study revealed that the iridovirus from the genus Megalocytivirus was the common viral pathogen detected in the fish specimens.

"Fish infected by megalocytivirus commonly display abnormal enlargement of spleen, kidney and liver, become lethargic immediately and also show darkening of body colour," she said, adding that by recognising these clinical symptoms at an early stage, the outbreak of the infection can be prevented.

She noted however, there are also healthy looking fish that are actually positive to iridovirus but not showing any symptoms, adding that these fish are called positive latent infection of iridovirus.

The study results was anticipated since iridovirus infection in groupers cultured in neighbouring countries such as Singapore, Indonesia and Thailand have also experienced disease outbreaks related to iridovirus infection since 1992.

She said it was worrisome to the aquaculture industry since the viral infection often causes high death rates among groupers.

She went on to explain that there are two iridovirus infection; acute infection and latent infection.

"The acute infection is where the virus proliferates and causing death to the host and the latent infection occur when the virus is not eliminated but continue to replicate at low level without killing the host cells.

"The fish that is suffering from latent infection could add as carrier for future disease outbreaks for megalocytivirus infection," she said.

"Our finding revealed that cultured grouper in the net cage have high risk of being infected by iridovirus meanwhile trash fish used to feed the cultured grouper could act as carrier for Megalocytivirus outbreaks.

Toward this end she pointed out several ways that could be used to prevent the infection.

"We can use dry pellet as alternative to feed cultured fishes, improve bio security framework, quarantined or isolate unhealthy looking fishes.

"At the same time, we are able to maintain the sanitation of the pond, culture only virus-free fry and pay attention to tight bio-security measures for grouper hatchery," she said.

Megalocytivirus is common among cultured grouper in Sabah but the infection can be prevented at an early stage by avoiding direct feeding with trash fish.

"Perhaps, in future we can develop the vaccine to provide long lasting immunological protection of grouper against Megalocytivirus in order to prevent the infection.

"The finding is important to ensure the sustainability of marine aquaculture in future," she said.



Close-up of a grouper.



Cultured groupers.



Asrazitah