

# **Monodon slow growth syndrome and Laem-Singh virus (LSNV) retinopathy Disease Card<sup>1</sup>**

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## **Background**

During 2002, slow growth of farmed *P. monodon* was reported throughout shrimp growing areas of Thailand and figures indicated that annual production volume was reduced by approximately 36%. The cause of this slow growth was not determined but laboratory trails suggested that a filterable infectious agent was involved (Withyachumnarnkul, et al., 2004). Injected extracts affected *P. monodon* but not *P. vannamei* (B. Withyachumnarnkul, unpublished). The slow growth condition was referred to as monodon slow growth syndrome or MSGS (Sritunyalucksana, et al., 2006). A survey of shrimp ponds exhibiting MSGS was carried out and revealed no association with known shrimp viruses (Chayaburakul, et al., 2004).

A new type of yellow head virus (YHV) was found in some of these shrimp, but subsequent work revealed that it was unlikely to be a component cause (Gangnonngiw, et al., In press). Another new virus found in these shrimp was Laem-Singh virus (LSNV), but preliminary results suggested that it too was not associated with MSGS (Sritunyalucksana, et al., 2006). Subsequent work on LSNV revealed that it was associated specifically with retinopathy in stunted shrimp from MSGS ponds and not with normal size, LSNV-positive shrimp (RT-PCR tested) from the same pond or from LSNV-positive shrimp from normal growth ponds (Pratoomthai, et al., 2008). It was concluded that LSNV is a necessary but insufficient cause of MSGS. The other component cause(s) that leads to LSNV-associated stunting of shrimp in MSGS ponds is still unknown but may involve other pathogens and/or environmental factors.

## **Etiology**

Currently incompletely understood but with LSNV considered to be a necessary but insufficient component cause.

## **Working Case Definition of MSGS**

As the complete etiology is still uncertain, there is no clear case definition for this syndrome. The following features can be used as a working case definition for surveillance and epidemiological purposes to collate more information about a syndrome referred to as monodon slow growth syndrome or MSGS.

<sup>1</sup>T.W. Flegel (2008). Monodon slow growth syndrome and Laem Singh virus retinopathy Disease card. Developed in support of the NACA/FAO/OIE regional quarterly aquatic animal disease (QAAD) reporting system in the Asia-Pacific. NACA, Bangkok, Thailand. 2pp.

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The suspected population should be RT-PCR positive for Laem-Singh virus and must have a coefficient of variation (CV = Standard deviation/Mean) of more than 35% by weight and absence of hepatopancreatic parvovirus (HPV) or of other severe hepatopancreatic infections by known agents while also complying with any 3 out of the 5 following gross signs:

1. Unusually dark color
2. Average daily weight gain of less than 0.1 g/day at 4 months
3. Unusually bright yellow markings
4. “Bamboo-shaped” abdominal segments
5. Brittle antennae

## Recommendations

1. Laem-Singh virus (LSNV) should be added to the exclusion list for broodstock and PL in rearing of *P. monodon*.
2. In countries where *P. vannamei* has already been introduced, *P. vannamei* and *P. monodon* should be reared separately, particularly at the maturation and hatchery phases.
3. National authorities should increase surveillance for slow growth syndrome in *P. monodon*.
4. Countries considering introduction of living, exotic shrimp species or any other crustacean species for aquaculture should add LSNV to the inspection list and to avoid other unknown viruses, should follow the full ICES protocol with the addition of co-habitation tests employing important, endemic crustacean species (Flegel, 2006).

## References

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<sup>1</sup>T.W. Flegel (2008). Monodon slow growth syndrome and Laem Singh virus retinopathy Disease card. Developed in support of the NACA/FAO/OIE regional quarterly aquatic animal disease (QAAD) reporting system in the Asia-Pacific. NACA, Bangkok, Thailand. 2pp.

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