

Infectious Myonecrosis Virus (IMNV)

– A viral pathogen to penaeid shrimps



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What is Infectious Myonecrosis ?

Infectious myonecrosis (IMN) is an emerging viral disease in shrimp aquaculture industry. It is caused by Infectious myonecrosis virus (IMNV). The disease was first recorded in Pacific white shrimp, *Penaeus vannamei* in Brazil in 2002 and then in 2006 in Indonesia including Java island. The disease causes significant economic losses to aquaculture due to associated mortalities in *P. vannamei* in grow out ponds. The virus infects all the life stages of shrimp including Post Larvae, juveniles and adult, but the mortality was observed in the juveniles and adult with a cooked appearance. Recently, occurrence of IMN in *P. vannamei* has been recorded in India in some shrimp farms.

Causes of IMNV

IMN is caused by a putative totivirus. IMNV particles are icosahedral in shape and 40nm in diameter. Transmission via water and vertical transmission from broodstock (transovarian or by contamination of the spawn eggs) to progeny is also likely to occur. IMNV may also be transmitted among farms by faeces of seabirds or shrimp carcasses. Outbreaks of IMN with high sudden mortalities may follow stressful events such as capture by cast-net, feeding, sudden changes in salinity or temperature, etc., in early juvenile, juvenile, or adult *P. vannamei* in regions where IMNV is enzootic.



Extensive whitish necrosis appearing like cooked shrimp with reddish distal segments and tail fans.

Symptoms

- Affected shrimp become sluggish, show disoriented swimming behaviour on the surface of water, with abrupt drop-in feeding rate.
- Whitish and reddish necrotic areas can be seen in the distal abdominal segments and tail fan and shrimp may show cooked appearance.
- FCR of affected populations may increase.
- Mortalities can be instantaneously high and continue for several days.
- Generally, mortalities range from 40 to 70% in cultivated *P. vannamei*.
- Clinical signs may suddenly appear following stressful events such as sudden changes in temperature or salinity.
- Sometimes disease may progress to a chronic phase with persistent low-level mortalities.

How IMN is Transmitted?

IMN is horizontally transmitted through cannibalism. Vertical transmission especially from female broodstock to progeny is also likely to occur. Artemia, bivalves and polychaete worms may act as vectors or carriers for IMNV.

How IMN can be Prevented / Controlled?

Being a viral disease, there is no treatment for IMNV. Prevention is the only way to circumvent the disease.

Following practices help to avoid the disease

- Use of IMNV-free brood stock is an effective prevention measure to minimize IMNV propagation in *P. vannamei* farming.
- Stock post larvae (PL) of at least PL15 stage. Select healthy PL using stress tests and make sure that the PL are negative for the IMN virus by RT-PCR.
- Tilling and restocking of affected farms with IMNV-free stocks of *P. vannamei* help in preventing its recurrence.
- Adopt strict biosecurity measures by providing reservoir ponds, bird and crab fencing, proper sanitation of men, material and machines.
- Implement best management practices (BMP) to maintain good water quality, proper feed usages and good health of shrimps through regular monitoring.

Prevention:

Pathostat Blu – 10g to 15g/kg of the feed for one week

Nagrowall – 10g to 12g/kg of the feed for one week

