

MACKAY MARINE MP AND MP PRO

Delivering Superior Results

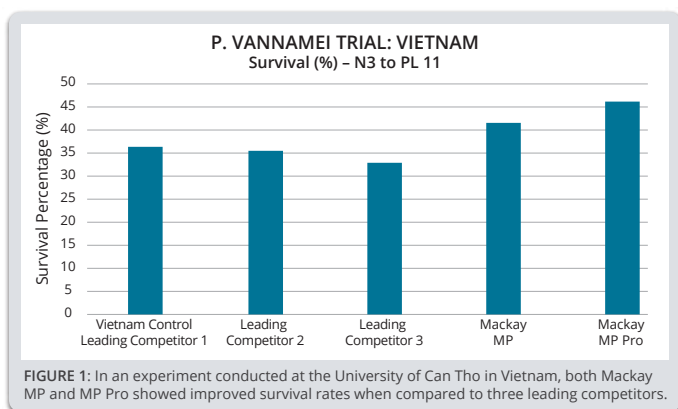
Introducing **Mackay Marine MP and MP Pro** – **high-performance**, scientifically formulated solutions for shrimp larvae and post-larvae development. Using a proprietary processing technology, these **functional feeds** ensure flexibility in ingredient selection, **superior digestibility**, **particle integrity**, and **water stability**. These feeds are packed with essential **immunostimulants**, **attractants**, and **prebiotics**, with MP Pro featuring additional **probiotics** to boost performance. Designed for optimal growth, health, and survival, Mackay Marine MP and MP Pro set a new leading standard in aquatic nutrition.

Key features and benefits

- Developed using a **proprietary processing technology** that allows for flexible ingredient selection focusing on digestibility
- Maintains **particle integrity** and **water stability**
- Delivers a **more digestible** feed
- Functional Feed featuring proprietary **immunostimulants**, **attractants**, **prebiotics**, and **probiotics**

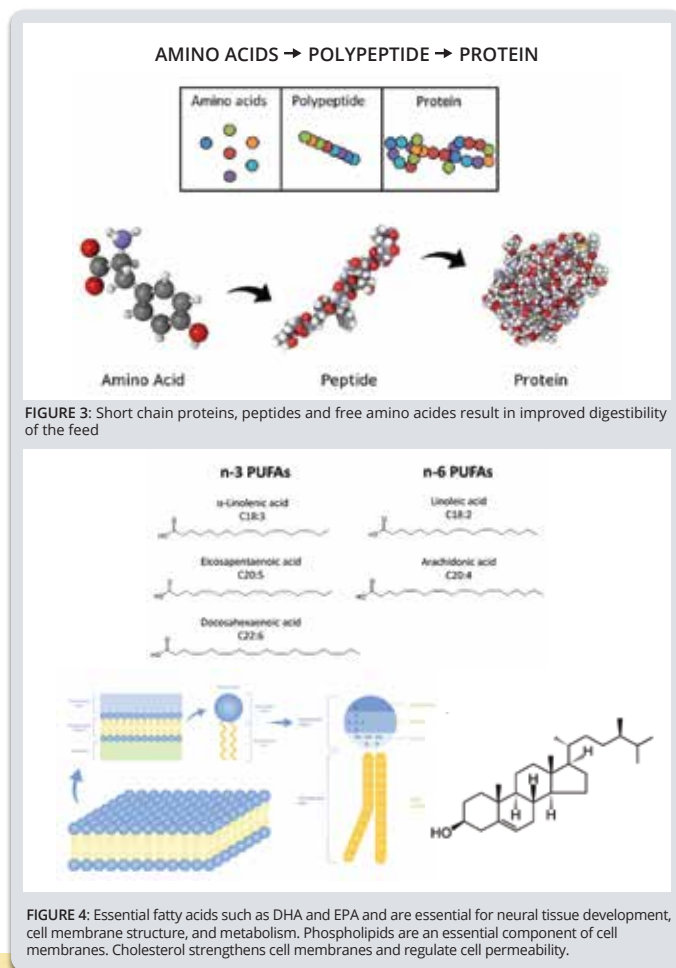
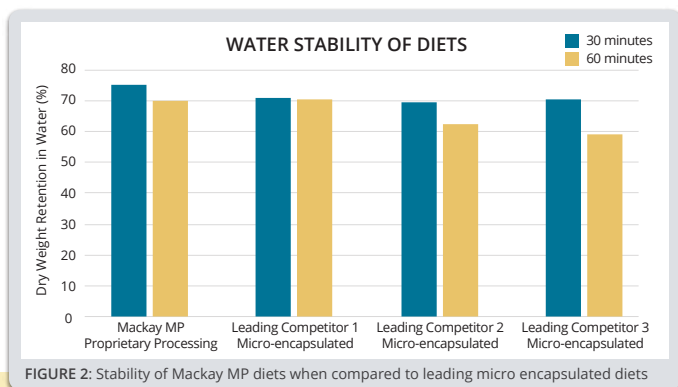
Highly nutritious diet

- Developed with a wide variety of **superior ingredients** to optimally balance proteins, lipids, carbohydrates and micronutrients, effectively meeting the **nutritional needs** of shrimp larvae and post-larvae
- Uses **highly digestible** marine proteins, peptides, and free amino acids (e.g. **Artemia**) ensuring exceptional digestibility (Fig. 3)
- A wide variety of **essential lipids** (e.g., HUFA, phospholipids, cholesterol) deliver **enhanced growth** and optimal health (Fig. 4)



Proprietary processing technology

- Virtually eliminates the need for binders and carbohydrates that limit nutritional value
- Allows for **flexible ingredient selection** while maintaining particle **integrity** and **water stability** (Fig. 2) of the feed



Functional feed that features proprietary attractants, immunostimulants and prebiotics

- Exceptional palatability and ingestion rates due to included **natural attractants**
- Proprietary and scientifically validated **immunostimulants** support and strengthen the immune systems of shrimp
- **Prebiotics** specifically chosen to support the developing gut flora of shrimp larvae and post-larvae **enhance natural defenses** against opportunistic pathogens

Mackay MP Pro – an enhanced probiotic diet that further **boosts performance** in the hatchery

- Advanced technology **integrates probiotics** directly into feed particles, ensuring effective delivery to the shrimp's gut for **healthier development** in larvae and early post-larvae
- Mackay MP Pro contains more than **30 million CFU/g** of probiotics for **enhanced performance** – actively inhibiting opportunistic pathogenic bacteria by producing **postbiotic molecules**
- **Superior performance** of Mackay MP Pro is demonstrated in Figures 1 and 6. Both diets (MP and MP Pro) outperformed leading competitors by improving shrimp growth and survival rates

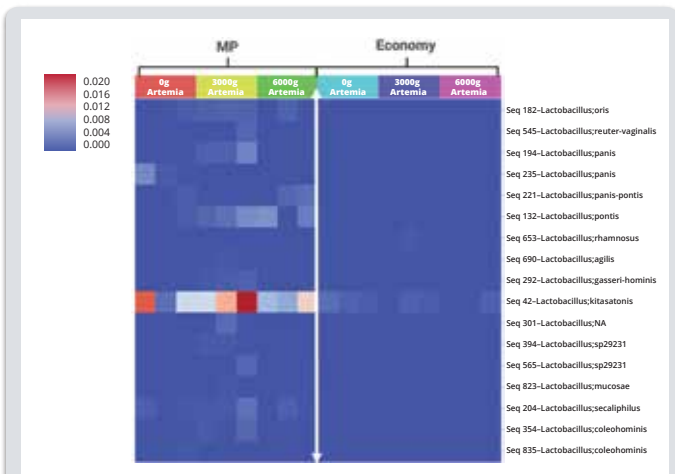


FIGURE 5: Enhanced probiotic growth in the shrimp gut after initial inoculation in pre-stocking tanks. Shrimp larvae that are fed Mackay MP diets show superior gut probiotic development due to effective dietary prebiotics.

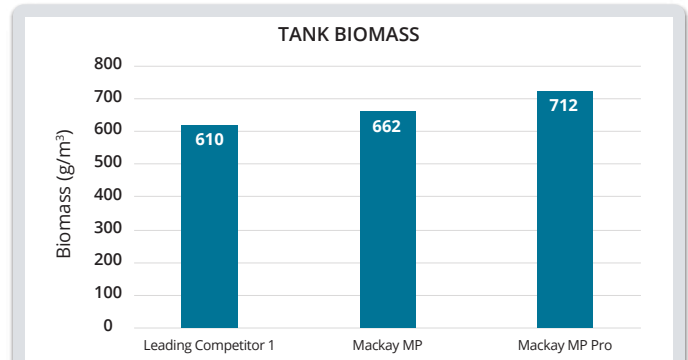


FIGURE 6: A second experiment conducted in Vietnam once again showed that Mackay MP and MP Pro diets significantly increased tank biomass. This improvement was directly linked to enhanced growth and higher survival rates, outperforming other diets.

Biosecurity data

- **Made in USA** – Produced in an FDA and GlobalG.A.P. certified plant. Handled, prepared, packaged, and stored to avoid contamination. Our products obtain negative results from the following pathogens:
 - Acute Hepatopancreatic Necrosis Disease (AHPND/EMS)
 - Crayfish/Aphanomyces astaci (Ca/A. astaci)
 - Decapod Iridescent Virus (DIV1)
 - Infectious Hypodermal and Haematopoietic Necrosis Virus (IHHNV)
 - Infectious Myonecrosis Virus (IMNV)
 - Monodon Baculovirus (Penaeus Monodon baculovirus) (MBV)
 - Necrotizing Hepatopancreatitis Bacterium (NHP-B)
 - Penaeus vannamei Nodavirus (PvNV)
 - Taura Syndrome Virus (TSV)
 - White Spot Disease (WSSV)
 - White Tail Disease (Macrobrachium rosenbergii Nodavirus) (WTD or MrNV)
 - Yellow Head Virus (YHV)



Feed guide for larval shrimp

LARVAL STAGES >	Z1	Z2	Z3	M1	M2	M3	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8	PL9	PL10	PL11	PL12
MPZ <70 µm	(0.55 kg)*																	
MP1 <100 µm			(0.90 kg)*															
MP2 100-150 µm						(1.50 kg)*												
MP3 150-250 µm							(2.30 kg)*											
MP4 250-450 µm												(4.00 kg)*						

Consult your local GSLA technical specialist for additional feed guidance.

Premium ingredients

Great Salt Lake Artemia’s most nutritionally dense functional diet is formulated to provide shrimp with highly digestible proteins, lipids, immunostimulants, prebiotics, probiotics (MP Pro), vitamins and minerals to ensure good health, growth, and vitality.



* Feeding instructions

- Amount of food in kilograms per million larvae/post-larvae
- Stages Zoea 1–M3/PL1: Feed 6 times a day (every 4 hrs)
- Stages PL1–PL12: Feed 4 times a day (every 6 hours)

Guaranteed analysis

Crude Protein (minimum)	50%
Crude Fat (minimum)	13%
Crude Fiber (maximum)	3%
Total Ash (maximum)	8%
Moisture (maximum)	6%



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The Global Partnership for Safe and Sustainable Agriculture



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