



Natural algae based solutions

● **Searup**
Immunity

● **DigestSea**
Digestive efficiency

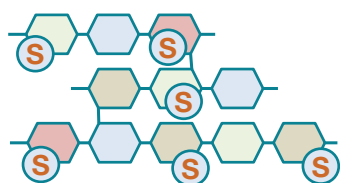


ALGAE TO IMPROVE PERFORMANCE IN AQUACULTURE

Algae are being increasingly explored for their nutritional, structural and biological properties. For 20 years, Olmix has developed marine biotechnology for animal, vegetal and human care. Olmix is specialized in the identification, characterization and **extraction of SULFATED POLYSACCHARIDES from green, red and brown algae (OLMIX MSP®)**.



OLMIX MSP®



Sulfated sugar polymers with biological properties due to their complex structure:

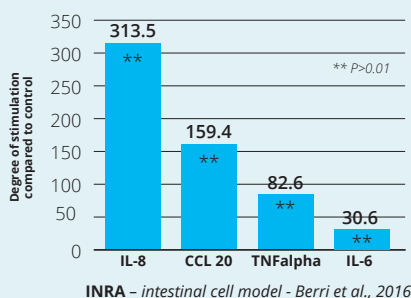
- 3D structure (branching)
- Different sugars units
- Rare sugars (rhamnose, fucose...)
- **Sulfate content** (not present in terrestrial plants, nor in yeasts, nor in freshwater microalgae!)

Specific MSP identified to boost Aquaculture performance

> MSP_{IMMUNITY}

MSP able to modulate immune mediators

→ Activation of the expression of immune mediators by the MSP_{IMMUNITY}



Searup

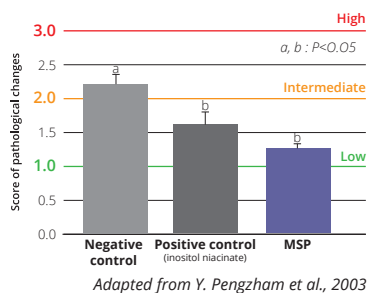
Searup is a formulated complementary feed based on MSP_{IMMUNITY} that reinforces the natural defenses of animals.

Searup is recommended during **stressful conditions** such as during handling at the hatchery or sudden changes in environmental conditions during grow out. Searup is also recommended to **strengthen the animals** in a preventive manner and **during disease challenges** that can affect survival and performance.

> MSP_{LIPIDS}

MSP with anti-hyperlipidemic properties for improved lipid metabolism

→ MSP_{LIPIDS} effect on liver pathologies



DigestSea

Digestsea is a complementary feed based on MSP_{LIPIDS} that stimulates digestion.

Digestsea is recommended during digestive troubles, when **feeding efficiency** is negatively affected, such as reduced feeding, which affects FCR and growth. Digestsea also improves lipid metabolism and reduces fatty liver problems in fish, **improving overall digestive welfare**.

Searup & DigestSea can be used together to improve animal's welfare and performance.



PROVEN EFFICACY IN FISH AND SHRIMP

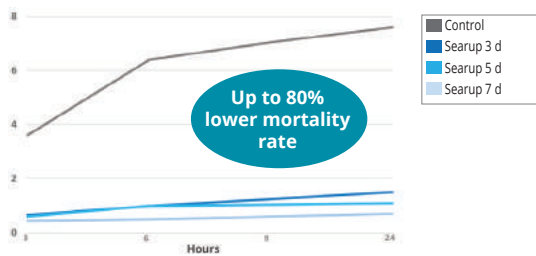


REDUCES ENVIRONMENTAL STRESS EFFECTS

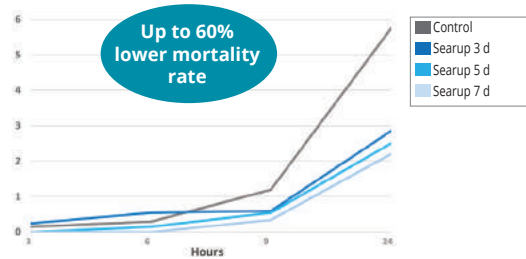
Effect of Searup on shrimp post larvae (*Litopenaeus vannamei*) mortality after stress test challenge (University trial, Vietnam)

- PL5, 7 and 9 to PL12: Searup 0.1% in feed during 3, 5, 7 d.
- PL12: 3 stress tests (2 levels of salinity (10 ppt & 30 ppt) and formalin (100 ppm)).
- PL mortalities were recorded at 3h, 6h, 9h and 24h after exposure to stress.

→ Cumulative mortality after 100 ppm formalin challenge (%)



→ Cumulative mortality after 30 ppt salinity challenge (%)



Searup showed a dose dependent increase in survival rates after all stress tests ($P < 0.05$), suggesting an increased tolerance to stress such as during handling, transport and stocking of grow-out ponds. Increasing the stress tolerance sets PLs off to a good start after stocking of grow-out ponds, and thus increases the production potential.

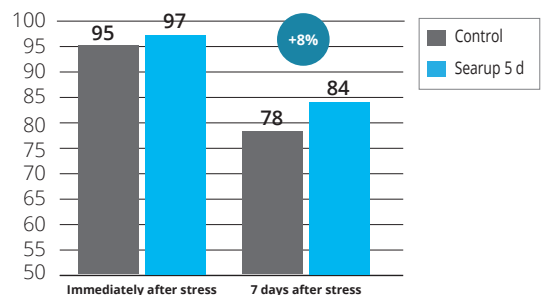
REDUCES EFFECTS OF TRANSPORTATION STRESS

Efficacy of Searup to mitigate mortality in tilapia (*Oreochromis niloticus*) during post-transport stress (Commercial hatchery trial, Thailand)

- 1000 (0.25 g) fish / hapa
- 5 days Searup in feed (0.2%)
- Transportation stress mimic: 16h in plastic bag
- Mortalities were recorded immediately after stress and 7 days later

Searup proved to increase resistance in fish to transportation stress. Searup has both immediate and long lasting effects.

→ Survival rate after transportation stress (%)



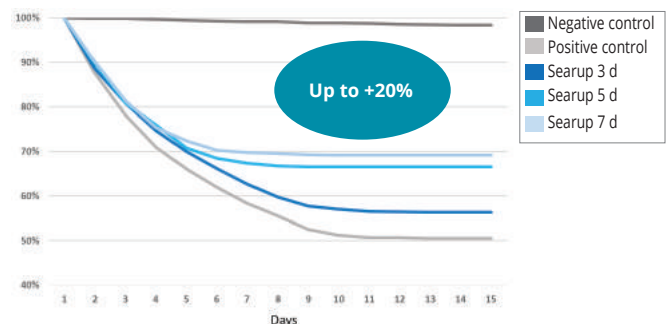
REDUCES EFFECTS OF PATHOGENIC CHALLENGE

Effect of Searup on shrimp post larvae (*Litopenaeus vannamei*) survival rate after EMS/AHPND challenge (University trial, Vietnam)

- PL5, 7, 9 to PL12: Searup 0.1% in feed during 3, 5, 7 d
- PL25: EMS challenge
- PL25 to PL40: daily mortality recording

Searup improved survival rates after a challenge with EMS/AHPND causing bacteria, even when the challenge took place two weeks after the last Searup application. Searup has a long lasting effect on tolerance to stress.

→ Survival rate (%)



Searup, thanks to its MSP_{IMMUNITY}, is a powerful preventive tool for farmers to support the welfare of fish and shrimp and to improve tolerance of different types of stress (environment/transportation/pathogens).

Searup Still



Cans of 1 and 5 liters

Dosage recommendations

- Shrimp and Fish:
 - Hatchery: 1 ml/kg of feed daily
 - Grow out: 2 ml/kg of feed
- Fish:
 - Hatchery: 2 ml/kg of feed
 - Grow out: 2 ml/10 kg fish biomass



DigestSea Still

Dosage recommendations

- Shrimp:
 - Hatchery: 1 ml/kg of feed
 - Grow out: 2-3 ml/kg of feed
- Fish:
 - Hatchery: 2 ml/kg of feed
 - Grow out: 2 ml/10 kg fish biomass



Cans of 1 and 5 liters

DIRECTIONS FOR USE

- Shrimp: use continuously
- Fish: use 1 to 2/week or continuously in case of troubles

Use and dosage can be adapted to local conditions.

CERTIFICATIONS

For a more sustainable aquaculture Olmix products are based on natural and environment-friendly materials. They have no toxicity against animals, humans or the environment. Olmix products are **dioxin and heavy metal controlled**.



CONTACT

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