



HP INGREDIENTS

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The Problem

Sea lice are the most significant damaging parasite to the salmonid farming industry in both Europe and the Americas. Infestations on farms significantly increase the number of lice in surrounding waters. In Chile, the most common is *Caligus rogercreceyi*. Left untreated, *Caligus* infestations may cause diseases due to the immune-suppressed states and developmental problems in fishes.

The global economic cost of sea lice is estimated to be approximately \$1 billion, which includes treatment costs, reduced fish growth, and reduced food conversion efficiency. The overuse of chemical baths and Emamectin to treat sea lice has resulted in drug resistant parasites. These treatments also increase stress and mortality of the fish. The marketability of fish suffering from sea lice infestation is also affected due to their appearance (marks on the skin of the fish) with direct economic losses, and the consumer's fear of residual anti-parasitic agents in the flesh of the fish and the related environmental risk.

What is SeaControl™?

SeaControl™ is a scientifically formulated feed additive based on a micro-pulverized seaweed blend with a standardized extract of Meliaceae and Piperaceae. SeaControl™ is effective in preventing and controlling sea lice infestations in sea water and marine facilities. SeaControl™ induces an anorexic effect in adult sea lice, inhibits embryonic development of sea lice inside the ovigerous sacks, and reduces the survival rate of larvae. HPLC analysis confirmed the presence of SeaControl™ in the mucus post consumption of feed.

Benefits of SeaControl™

- Effective against sea lice infestation (*Caligus* and *lepeoptheirus*) in sea water and marine facilities
- Disrupts normal development and hatching of larvae
- Reduces the survival rate of larvae by 90%
- Lowers the number of juveniles
- Lowers re-infestation frequency
- Lowers use of chemical bath treatments and Emamactin
- Better sanitary conditions and marketability of the fish

Mechanism of Action for NatControl™

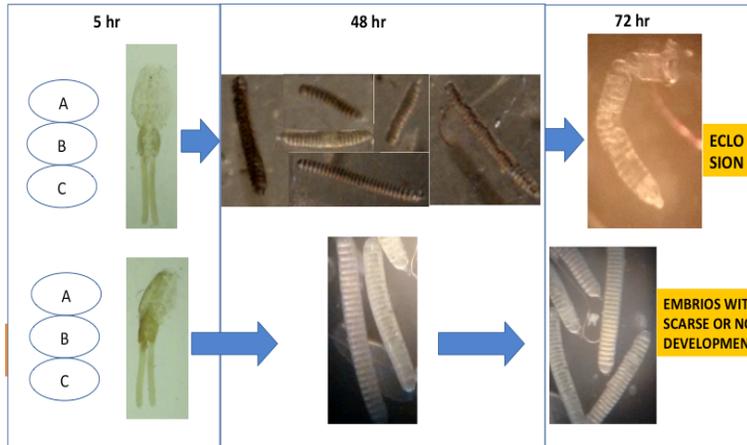
- Disrupts the normal development of larvae through an antagonist blockage of the Ecdisone receptor (EcR)
- Induces an anorexic effect in adult sea lice

Direction of Use:

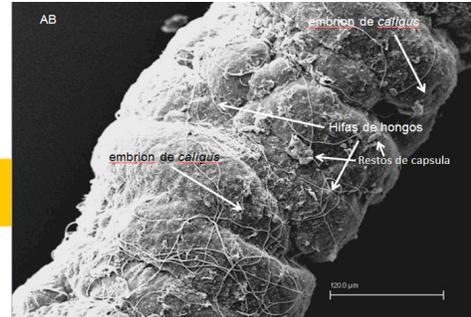
- 0.5 to 1 kg per ton of feed for 7-14 days as a preventive strategy prior to temperature increase

Efficacy Findings from SeaControl™ Clinical Trials

SeaControl™ Inhibits Embryonic Development vs. Increase of Eclosionated Sacks in Control

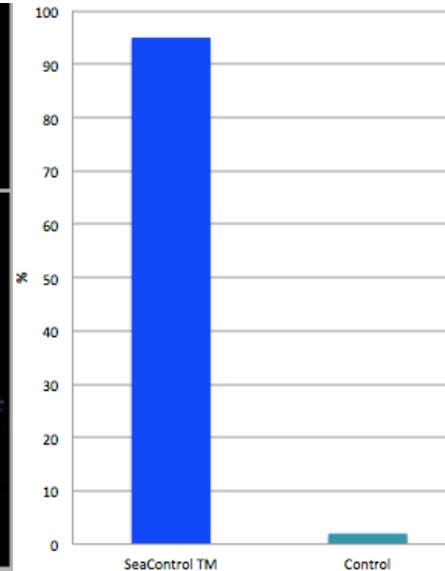
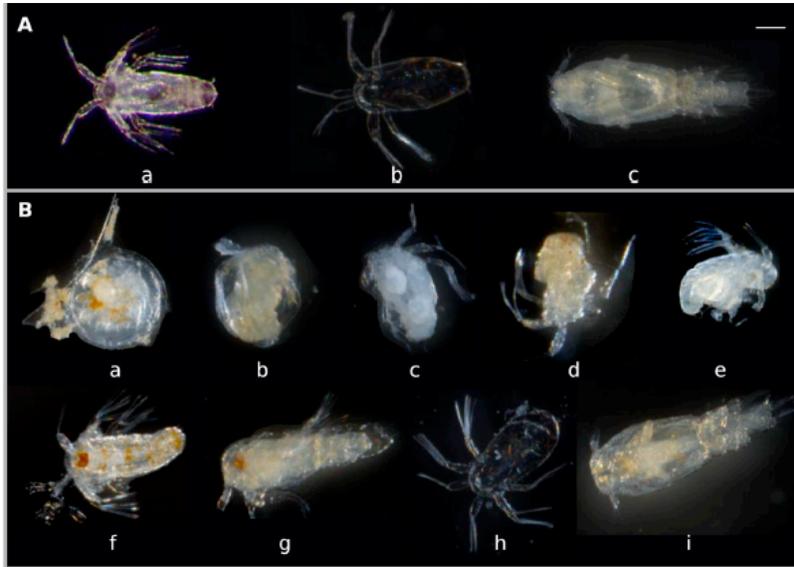


SeaControl™ Breaks Capsular Wall, Less Fungus Hyphae with Rugosities



SeaControl™ Disrupts the Normal Development of Larvae by Disrupting Hatching or Deforming Larvae

SeaControl™ Increases Larvae Mortality by 90% Larvae mortality in vitro essay



HPLC Analysis Confirmed the Presence of SeaControl™ in Mucus

A total of 40 Atlantic salmon weighing 650g each were fed with diets adding 500g of SeaControl™ per ton of feed. Mucus samples were collected and analyzed at 0,4,8,12,24, 48 h. Mucus HPLC analysis confirmed the lethal dose was achieved at 24 h after feeding. SeaControl™ is an effective non-pharmaceutical supplement additive for sea lice control.