

### The Problem

Intracellular pathogens such as Piscirickettsiosis (SRS), Rickettsia-like organisms and viruses, are one of the most severe challenges for the salmon industry in top producer countries like Chile. The bacteria invade the inside of host cells, has mortality rate of about 90%, causing annual economic losses of around US\$500–US\$700 million, as well as several tons of antibiotics delivered to the environment. In the case of shrimp, WSSV causes severe economic losses with no effective tools to control it.

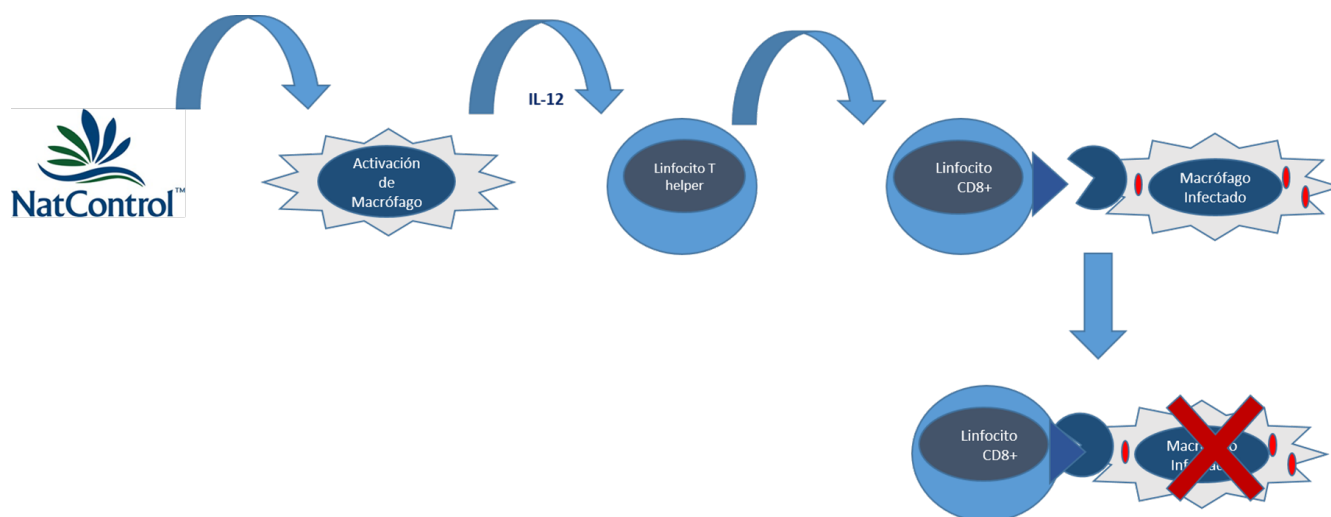
### What is NatControl™?

NatControl™ is a scientifically formulated feed additive based on a micro-pulverized seaweed blend with a standardized labdane diterpenoid of Acanthaceae extract. NatControl™ naturally stimulates cellular immune response (Patent WO2006008115 A1) by shifting the immune response to one mediated by cells (TH1), shown to be efficient in the elimination of intracellular pathogens such as *P. salmonis* and other viral agents. NatControl™ helps to reduce the use of antibiotics to meet industry goals and standards.

### Benefits of NatControl™

- Naturally stimulates immune response against intracellular pathogens, viruses & bacteria
- Destruction of infected cells via increase in T Lymphocytes
- Lower outbreak, lower mortalities
- Reduces the use of antibiotics
- Increases hemocytes and the biosynthesis of receptors in recognition of pathogens
- Inhibits replication of White Spot Syndrome Virus via inhibition of NF-Kb

### Mechanism of Action for NatControl™



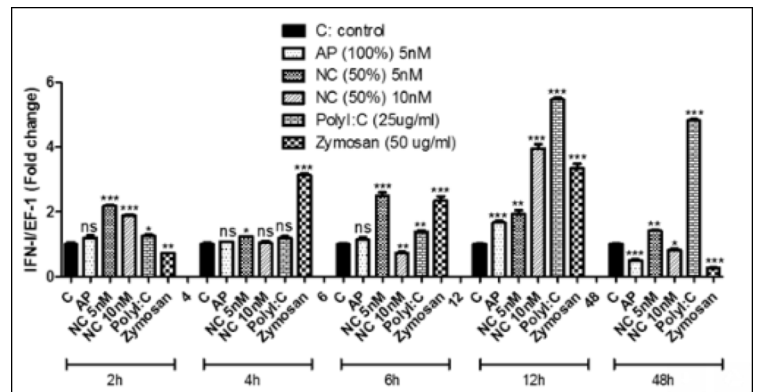
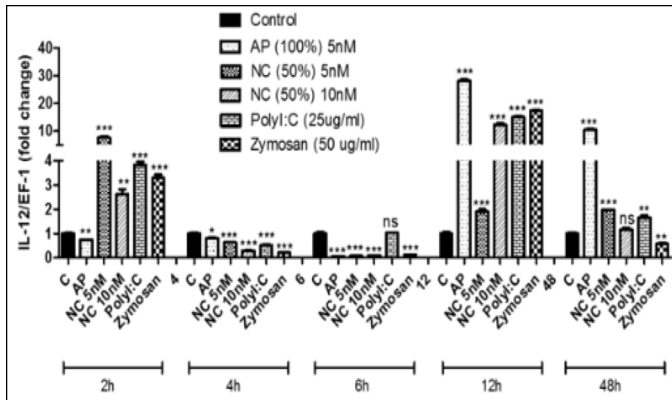
- Promotes activation of macrophages
- Promotes the innate Immune system cytokines (IL-12 and IFN-I)
- Activates cellular immunity (Th1)
- Increases CD8+

### Directions for use:

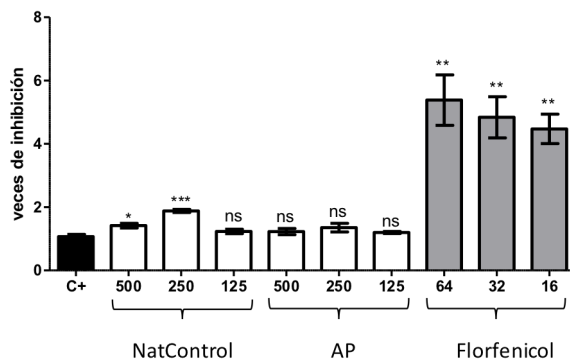
- Shrimp: 0.5 - 1 kg per ton of feed for 21 days.
- Fish: 0.5 - 1 kg per ton of feed for 15-45 days.

## Efficacy Findings from NatControl™ Clinical Trials

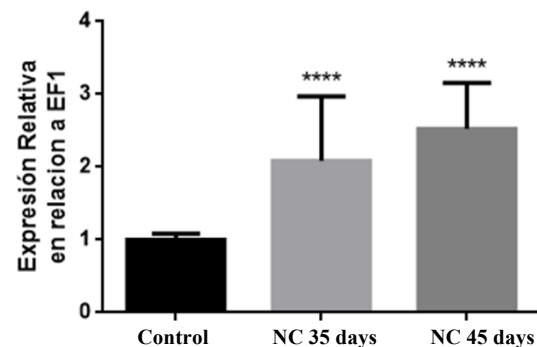
**NatControl™ Increases IL-12 by 10-fold and Increases INF-I by 4-fold**



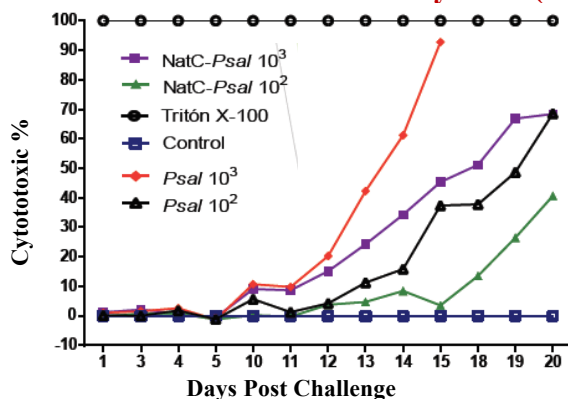
**NatControl™ Inhibits P. salmonis Growth by 25% Compared to Florfenicol**



**NatControl™ Increases T Cytotoxic Lymphocytes (CD8+)**



**NatControl™ Increases Cellular Survival Rates in Atlantic Salmon Anterior Kidney Cells (SHK-1)**



**NatControl™ Reduces Mortality by 33.3% against P.salmonis challenge**

