Compound L Potent tool for inhibiting EMS vibrio

AQUAculture INformation TECHnology ***Biotechnology Benefiting Aquaculture***

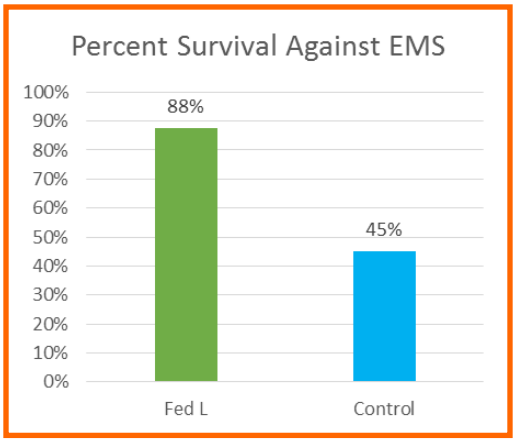
Compound L test results against EMS
(also known as Acute Hepatopancreatic Necrosis Disease or Syndrome-AHPND or AHPNS)

EMS or **E**arly **M**ortality **S**yndrome is a rapidly disseminating disease process with a specific and characteristic pathology that is due to the production of a potent bivalent protein toxin by certain strains of *Vibrio parahaemolyticus* that have picked up the genes that allow the bacteria to produce this potent toxin (that is very similar to a range of toxins that are produced in insecticidal pesticides). These bacterial strains have been wreaking havoc in many shrimp farming areas although there are very strong indications that suggest that this is a component of a multifactorial disease process. The bacteria does not appear to be an obligate pathogen and ultimately what kills affected animals is a massive secondary bacterial infection as a result of a seriously damaged hepatopancreas.

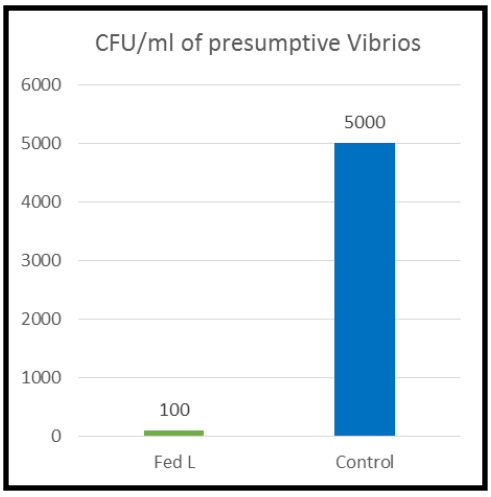
Compound L is a proprietary mixture of short chained molecules that are widely consumed by human beings in their food and often added for flavoring and palatability. They are GRAS and interestingly have been found to possess a wide range of antimicrobial attributes. We tested the ability of our specific mixture of compounds to inhibit the disease process in a laboratory environment.

Each experiment was conducted in triplicate with 20 juvenile *P. vannamei* held in 30 liter tanks. The controls were also in triplicate. The length of the experiment was 15 days total. Animals are fed feed top dressed with compound L and the etiologic agent of EMS. They are fed five times daily throughout the course of the experiment.

At day 2 control mortality begins. No experimental (animals fed compound L) animals died from EMS during the course of the study.



There was a significant difference between the fed and control shrimp. The numbers of vibrios that grew up on TCBS as green colonies at the end of the test was also determined. As the study showed, there was also a significant drop in the concentration of vibrios in those tanks fed the L product.



Conclusion: Compound L is a viable tool for the reduction of vibrio loads in feed and in a controlled study in a laboratory environment was found to be able to completely prevent EMS from killing animals that were deliberately infected compared with a substantial mortality in control animals. While we do not expect that this will prevent the problem in farm, as it is a complex process with as of yet poorly understood and defined parameters that contribute to the disease in the farm, the cost of this tool is sufficiently inexpensive enough to justify the use of the tool on a routine basis even if it only works against vibrio loads in general. This compound has been shown to be a powerful tool for inhibiting the ability of EMS responsible *V. parahaemolyticus* strains to produce the acute disease.

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