Katherinne Valderrama Rios et al., J Aquac Res Development 2017, 8:2 (Suppl)
http://dx.doi.org/10.4172/2155-9546.C1.015

Phenotype of *Aeromonas salmonicida* subsp. *salmonicida* cyclic adenosine 3',5'-monophosphate receptor protein (*Crp*) mutants and its virulence in rainbow trout (*Oncorhynchus mykiss*)

Katherinne Valderrama Rios[1], **Melissa Saravia**[2] and **Javier Santander**[3]
[1]Catholic University of North, Chile
[2]Universidad Mayor, Chile
[3]Memorial University of Newfoundland, Canada

Precise deletion of genes related to virulence can be used as a strategy to produce attenuated bacterial vaccines. Here, we study the deletion of the cyclic 3',5'-adenosine monophosphate (cAMP) receptor protein (*Crp*) in *Aeromonas salmonicida*, the causative agent of furunculosis in marine and freshwater fish. *Crp* is a conserved bacterial global regulator, controlling physiology processes, like sugar utilization. Deletion of the cyclic 3*crp*,5'-adenosine monophosphate (cAMP) receptor protein (crp) gene has been utilized in live attenuated vaccines for mammals, birds, and warm water fish. Here, we characterize the crp gene and reports the effect of a crp deletion in *A. salmonicida*, virulent and non-virulent isolates. We found that *A. salmonicida* Δcrp was not able to utilize maltose and other sugars, and its generation time was similar to the wild-type. Also, *A. salmonicida* Δ*crp* mutant showed a low frequency of VapA-strain conversion after thermal shock, suggesting that *Crp* plays a role in activation of chromosomal insertion (IS) elements that cause genome rearrangements in *A. salmonicida*. *A. salmonicida* Δ*crp* showed a higher ability of cell invasion than the wild-type. Fish assays showed that *A. salmonicida* Δ*crp* mutant is attenuated in rainbow trout (*Oncorhynchus mykiss*) and triggered protective immunity against the intra coelomic challenge with *A. salmonicida* wild type. We concluded that deletion of *A. salmonicida* crp influence sugar utilization, intracellular infection and virulence. Furthermore, deletion of *crp* in *A. salmonicida* diminished endogenous chromosomal modifications making this deletion an effective strategy to develop immersion live attenuated vaccines against furunculosis.

Biography

Katherinne Valderrama Rios is a Chilean PhD student. In the field of research, her interest focused on the descriptive study of parasites in marine invertebrates. She is currently interested in deepening the pathologies of aquatic organisms, their preventive management, palliative therapies and disease control. One of the most important measures of control of diseases in aquaculture is vaccination, and within this, massive and low-cost vaccination is paramount. For this reason, she has spent her last years researching on the effect of gene mutations on *Aeromonas salmonicida*, a bacterium known worldwide for its negative effects on aquaculture. Mutation of certain genes related to virulence produces attenuated organisms that can be effective in the development of economic and mass application vaccines in the industry. Following her research, she has been accepted by the Memorial University of Newfoundland as a visiting Graduate student and will make a two-month stay at this institution to complete her PhD thesis.

kata.valderrama@gmail.com

Notes: