XI ENCONTRO BRASILEIRO DE ECOLOGIA QUÍMICA
XI BRAZILIAN MEETING ON CHEMICAL ECOLOGY
October 23-26, 2019
Maceió, Brazil

IN VITRO STUDY OF A CHEMOSENSORY PROTEIN FROM SEA LOUSE *Caligus rogercresseyi*

Andrés Quiroz[1]; Ana Mutis[2]; Jorge Pino[3]; Ricardo Godoy[4].

[1]Laboratorio de Química Ecológica, Departamento de Ciencias Químicas y Recursos Naturales. Universidad de La Frontera; andres.quiroz@ufrontera.cl. [2]Universidade Federal de Rondônia; ana.mutis@ufrontera.cl.[3]Cargill Innovation Center; jorge_pino@cargill.com. [4]Doctorado en Ciencias de Recursos Naturales; r.godoy04@ufromail.cl.

KEYWORDS: *Caligus rogercresseyi*; CHEMOSENSORY PROTEINS; FLUORESCENCE-BINDING BIOASSAY.

ABSTRACT: The sea louse (*Caligus rogercresseyi*) is an ectoparasitic copepod that negatively affects salmon farming industry by reducing the health status of fish and producing significant economic losses. An alternative strategy to *C. rogercresseyi* control friendly with the environment or population´s health has been investigated. Previous information have pointed out that this crustacean has the ability of detecting semiochemicals. The use of semiochemicals as compounds capable of mediate the chemical communication between species could leads to the design of specific and harmless control traps. The olfactory system is the responsible for processing these chemical signals and chemosensory proteins (CSPs) are thought to act as specific carriers of these molecules. Therefore, the objective of this work was to evaluate the recombinant production of a previously identified CSP transcript from *C. rogercresseyi* (CrogCSP) transcriptome through the cloning, bacterial expression in competent cells and purification of CrogCSP using Ni(II)-based immobilized metal ion affinity chromatography, and the selectivity of this protein against 9 different chemical compounds was tested by fluorescence binding assays. The results indicated that CrogCSP has an apparent molecular mass of ≈10 kDa. Additionally, the protein sequence showed has four cysteine residues and the olfactory specific protein D (OS-D) superfamily domain which is characteristic of the CSPs. Moreover, our results indicated that a polyunsaturated alcohol, a substituted aromatic compound and a monoterpene exhibited dissociation constant (KD) of 2.10, 4.17 and 2.28 µM respectively for the complex formed with CrogCSP, indicating that this chemosensory protein is selective over certain ligands. Likewise, with the knowledge of the olfactory mechanisms of *C. rogercresseyi*, new methods for controlling sea lice could be incorporated in the near future.