

Abstract

Photorhabdus insect-related toxins A and B (Pir A and Pir B) are two different types of insecticidal toxins that were firstly found in *Photorhabdus luminescens*. Its homolog, from *Vibrio parahaemolyticus*, is found to cause acute hepatopancreatic necrosis disease (AHPND) in the shrimp, since it contains plasmid pVA1. When binded together, Pir A and B can exert its effect, because they form a structure similar to Cry protein, a pore-forming protein that can kill insects. However, the binding affinity between Pir A and B is small enough, leading to hardness to form the crystal structure, hence a sequence of linkers is added to stabilize the protein. Thus, the aim of this research is to purify the Pir A-linker-Pir B protein with some chromatographic methods, namely affinity and gel filtration chromatography, and study the 3D structure using crystallization and x-ray diffraction method. It is found that the chromatogram of the results contains only one high peak, with the actual concentration of 32.2 mg/mL. Although the research achieved the purification protein, the study of 3D structure of the protein could not be processed due to time limitation.

Keywords: Pir A and B; purification; affinity chromatography; gel filtration chromatography; crystallization.