

Optimization of Phospholipase A1 Production from Antarctic Psychrophilic Bacterium
Pseudoalteromonas sp. L203 and Eicosapentaenoic acid (EPA) Containing Phosphatidyl Choline
Using Isolated Enzyme

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A psychrophilic bacterium designated as *Pseudoalteromonas* sp. L203 based on its physiological properties and 16S rRNA sequence was isolated from the bottom sediment of Marian cove, King George island, Antarctica. This strain optimal growth temperature of about 15°C was found to produce extracellular phospholipase A1. The production of this psychrophilic enzyme was optimized by addition of egg-yolk in the medium and the purification yield was improved using hydrophobic-affinity column chromatography. Using this psychrophilic phospholipase, phosphatidyl cholines with EPA at sn-1 and sn-2 position were produced from ethyl ester of EPA and lyso-phosphatidyl choline in two phase reaction system was also optimized to a yield of 35%. With this enzyme and other phospholipases from marine bacteria such as *Streptomyces* sp.3424 (PLC) and *Streptomyces* sp.2436 (PLA2), an enzymatic phospholipid manipulation set can be constructed.