

BM-4

Effects of Various Detergents on the Tolaasin-induced Hemolysis and the Tolaasin-induced Channel

Kyoung-Sun Park* and Young-Kee Kim

Department of Agricultural Chemistry, Chungbuk National University.

Tolaasin, a 1.9 kDa peptide forming membrane pores, is produced by *Pseudomonas tolaasii* and causes a brown blotch disease on cultivated oyster mushroom. During the purification of peptide by a gel permeation chromatography, we have found that fractions of molecular weight ranges between ~2 to 40 kDa have hemolytic activities and the fractions of higher M.W. showed faster hemolysis. Based on these observations, we have suggested that tolaasin-induced hemolysis requires the multimerization of tolaasin. In order to prove this idea, the effects of various detergents, such as anionic, cationic, zwitterionic, and nonionic detergents, were evaluated on the tolaasin-induced hemolysis since detergent likely dissociated multimerized tolaasins in preliminary experiments. In case of benzethonium chloride, a cationic detergent, the tolaasin-induced hemolysis was blocked at the concentration ranges between 100 nM and 10 μ M. At below these concentration ranges, tolaasin disrupted the membranes of red blood cells; however, detergent-induced hemolyses were observed at above these concentration ranges. Other types of detergents showed similar inhibitory effects on the hemolysis. Tolaasin forms two types of channel, 280 pS and 570 pS, in planar lipid bilayer. The current-voltage relationships of tolaasin channels appeared to be linear, suggesting nonselective cation channels. Currently, the effects of various detergents on the electrophysiological characteristics of tolaasin-induced channels are under investigation.