Development of screening method for highly enriched peptides toward a multiple LPS using epoxy bead

Yun-Gon Kim[1], Chang-Soo Lee[2], Woo-Jae Chung[3], Eun-Mi Kim[3], Dong-Sik Shin[3], June-Hyung Kim[3], Yoon-Sik Lee[3], Junho Chung[4], Byung-Gee Kim[1, 3*]

[1]Interdisciplinary Program of Biochemical Engineering and Biotechnology, [2]School of Chemical and Biological Engineering in College of Engineering and [3]Department of Biochemistry and Molecular Biology in College of Medicine, Seoul National University, Seoul, Korea

Tel: +82-2-880-6774, Fax: +82-2-874-1206

Abstract

Lipopolysaccharide (LPS)-binding peptides were enriched by using epoxy beads as a novel support to immobilize LPS for a phage displayed peptide library screening. The sequence of Phe-Ala-Pro-Trp (FAPW) was identified as the most significant consensus motifs of the 10 selected clones, and Pro-Phe (PF) was the key dipeptide for binding at the apex of a disulfide-constrained heptametrical loop. Moreover, AWLPWAK, one of the highly conserved heptamer peptides, could detect selectively Gram-negative bacteria *via* a whole cell binding test. The effective screening method for ligand-binding peptides or proteins will provide a wealth of information for understanding ligand-receptor identification and the possibility of application as a bacteria biosensor.