

Screening of peptide ligands of *Salmonella enteritidis* lipopolysaccharide from phage display

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Abstract

Endotoxic shock follows a cascade of events by release of lipopolysaccharide during infection with Gram-negative bacteria. Lipopolysaccharide (LPS) plays an important role in the pathogenesis of Gram-negative bacteria infection and their endotoxic properties such as cytokine production, inflammation and shock. Therefore, LPS is intriguing target for new antibacterial and anti-inflammatory agents. However, there are few peptide ligands for LPS until now, which prompt us to investigate the peptide ligands for the LPS.

Peptide ligands for *Salmonella enteritidis* lipopolysaccharide have been identified by screening in diverse peptide library using phage display technology. To increase of selectivity for *Salmonella enteritidis* lipopolysaccharide, epoxide attached micro bead was used for the covalent binding with LPS from *Salmonella enteritidis* within biopanning step. After 5 rounds of biopanning, the heptapeptide, AWLPWAK, can be selected that has high affinity to the LPS from *Salmonella enteritidis*. The peptide sequence is almost composed with hydrophobic and polar residues. In this study, we can confirmed that selected AWLPWAK is bound to the LPS from *Salmonella enteritidis* and it could be applied to study of binding phenomena between LPS and protein or peptide in proteomics.

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