Characterization of lipopolysaccharide O-antigen specific phage displayed peptides

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Abstract

The phage display using lipopolysaccharide(LPS) immobilized epoxy bead was very efficiency screening method to obtain highly conserved phage displayed peptides. After 5 rounds biopanning, two phage displayed peptides which had highly binding affinity to LPS from *Salmonella enteritidis* were able to screen effectively. Fortunately, BLAST search showed that our phage displayed peptides have a homology with TLR(Toll like receptor) family which participates in a bacterial infection mechanism. The two phage displayed peptides showed stronger interaction to O-antigen than lipid A as detected by bead phage ELISA test, which might be thought that O-antigen is bigger than lipid A, so O-antigen is easily exposed to peptide library. Also, the peptides could discriminate between LPS from *Salmonella* and LPS from *Escherichia coli* as LPSs from *Salmonella* generally showed high bead phage ELISA values in comparison with LPSs from *Escherichia coli* . This result shows that the two phage displayed peptides have the specificity against LPS from *Salmollela*, and it also can be the clue that the biopanning was done against O-antigen, highly variable region, rather than lipid A, highly conserved hydrophobic region.

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