

Experiments for Quantitative Detection of Foodborne Pathogenic Bacteria using Oligonucleotide Microarray

황병희, 엄호섭¹, 차형준*

포항공과대학교 화학공학과; ¹아이오와대학교 화학공학과
(hjcha@postech.ac.kr*)

Oligonucleotide-based microarrays are becoming increasingly useful for the analysis of expression profiles and polymorphisms among interested genes. Here, we checked the possibility for quantitative detection and diagnosis of foodborne pathogenic bacteria using oligonucleotide-based microarrays. The oligonucleotide chip technology was applied to 1 control strain and 7 foodborne pathogenic bacteria strains. It was designed repeated spots of 8 hyperspecific and 2 highly conserved (control) capture probes from 16S rDNA sequences. In order to validate experimental quality and to certificate specificities among specific spots at a glance by 2D and 3D views, quantitative visualization tool was developed. To check the detection limit, experiments were performed under various concentrations of target. And to study the linear correlation between mixing ratio and quantitative result, experiments were achieved under various mixing ratios of targets. Using proposed oligonucleotide chip, we could classify species and even subtypes of some pathogens and validate the detection limit and the linear correlation for quantitative detection.