Sensitive detection of *Escherichia coli* by magnetic separation and real-time PCR

이혜진, 김경우, 김중배, 오민규*
고려대학교
(mkoh@korea.ac.kr*)

A method combining magnetic separation and real-time PCR was developed to detect *Escherichia coli*. *E. coli*, which is normal inhabitant of the intestine, has been accepted as an indicator organism for the detection of the potability of water. Most *E. coli* strains as such are not pathogenic and serve useful function in the intestine. However, their presence in drinking water indicates possibility of contamination by other potential enteric pathogens. Accordingly, the sensitive detection of *E. coli* is extremely important in biotechnology, medical diagnosis, environmental fields and the current fight against bioterrorism. For sensitive detection of *E. coli*, anti-*E. coli* antibody conjugated magnetic beads were mixed with *E. coli* sample. Approximately 95% of the *E. coli* in solution were captured and the minimum detection limit was 10^1 bacterias $m\ell^{-1}$. After *E. coli* capture added aptamers. The magnetic bead, *E. coli*, and aptamer complex was collected by magnetic bar. The collected *E. coli*-bound aptamers were released from *E. coli* by heating and their amount was measured by real-time PCR. This method allowed a simple and accurate quantification of *E. coli* by combining separation ability of magnetic beads and real-time PCR-amplification of aptamer.