A sensitive method to detect *E. coli* using magnetic nanoparticles and RNA aptamers

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An aptamer is a single-stranded oligonucleotide that can bind proteins, small-molecule compounds or living cells with high affinity and specificity. In this study, a highly sensitive method to detect *Escherichia coli* in the solution using antibody conjugated magnetic nanoparticles and *E. coli* specific RNA aptamer has been developed. Detecting bacteria in a very sensitive and rapid manner is very important in medical and environmental fields. For sensitive detection of *E. coli*, anti-*E. coli* antibody conjugated magnetic nanoparticles were mixed with *E. coli* sample together with RNA aptamers. The nanoparticles, *E. coli*, and RNA aptamer complex was collected by magnetic bar. The collected *E. coli*-bound RNA aptamers were released by heating from *E. coli* and the amount was measured by real-time PCR(RT-PCR). This method allowed an accurate quantification of *E. coli* using RNA aptamer.