Supplementary material

Ultrasensitive Detection of *Escherichia coli* O157:H7 by Immunomagnetic Separation and Selective Filtration with Nitroblue Tetrazolium/5-Bromo-4-chloro-3-indolyl Phosphate Signal Amplification

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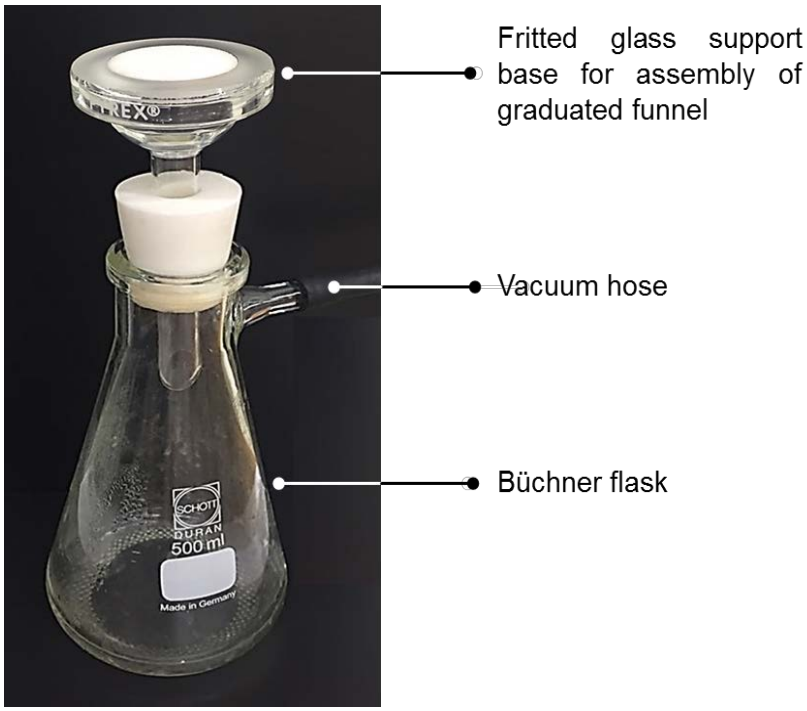

Figure S1. Photograph of the selective filtration system for the ultrasensitive detection of *E. coli* O157:H7.

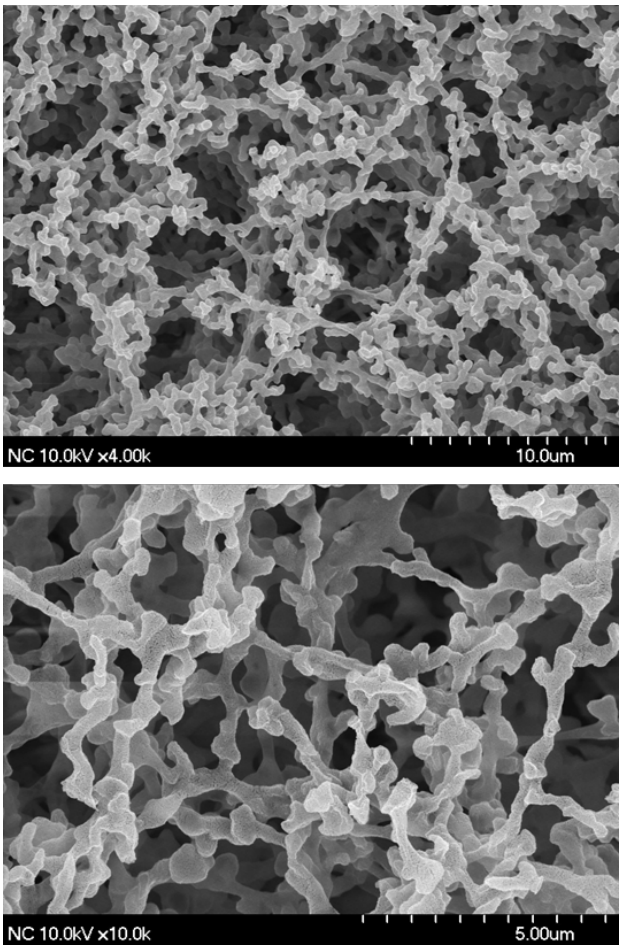

Figure S2. Scanning electron microscopy images of nitrocellulose membrane filters with a pore size of 1.2 μm.

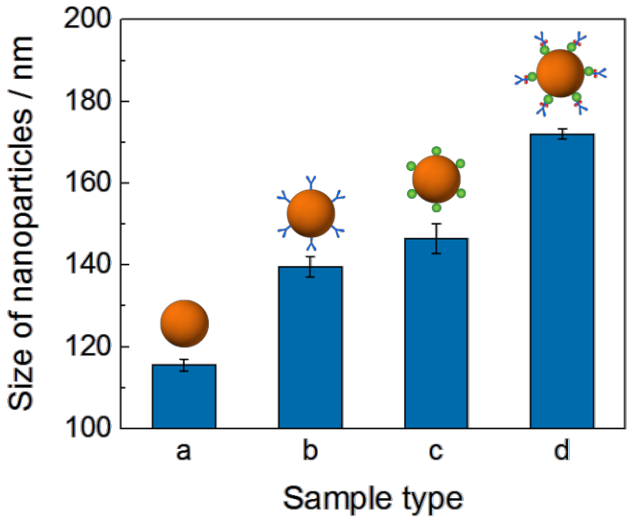

Figure S3. Hydrodynamic diameters of various MNP conjugates (a: MNP, b: anti-*E. coli* O157:H7 antibody/MNP conjugates, c: STA-AP/MNP, d: biotinylated antibody/STA-AP/MNP conjugates).

Table S1. Comparison of various methods developed for visual bacteria detection.

Detection method	Target	LOD (CFUmL^{-1})	Time	Reference
ELISA	*Escherichia coli* O157:H7	10^2	3 h	1
ELISA	*Escherichia coli* O157:H7	10^5	5 h	2
Colorimetry	*Staphylococcus aureus*	2.5×10^4	5–10 min	3
Lateral flow immunoassay	*Escherichia coli* O157:H7	10^3	15 min	4
Lateral flow immunoassay	*Escherichia coli* O157:H7	5×10^3	20 min	5
Enhanced colorimetry based on selective filtration	*Escherichia coli* O157:H7	10	55 min	This work

Abbreviations: ELISA, enzyme-linked immunosorbent assay; LOD, limit of detection; CFU, colony forming units.

Table S2. Comparison of various selective filtration methods developed for bacteria detection.

Target bacteria	LOD (CFUmL^{-1}) in pure samples	LOD (CFUmL^{-1}) in food samples	Time	Reference
Staphylococcus aureus	1.5×10^3 (visual)	Milk : 1.5×10^5	40 min	6
Salmonella typhimurium	2.0×10^1 (visual)	Lettuce : 2.0×10^1	45 min	7
Listeria monocytogenes	2.0×10^1 (visual)	Lettuce : 2.0×10^1	35 min	8
Escherichia coli O157:H7	10 (visual) 6.998 (optical density)	Lettuce : 10 (visual) 21.216 (optical density)	55 min	This work

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