Electronic Supplementary Information for

Aptasensor for Simple Detection of Ocharatoxin A Based on Side-by-Side Oriented Assembly of Gold Nanorods

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Activation and Pretreatment of Thiolated DNA and Linker DNA

Prior to use, thiol-modified (thiolated) DNA was activated with TCEP. Tipically, 3' and 5'-thiolated DNA was treated with fresh prepared 100 μ M TCEP (TCEP: DNA=100:1) in Tris-HCl buffer (pH 8.5) for 1 h at room temperature to cleave the disulfide bond. The de-protected oligonucleotides were purified using a NAP-5 column (GE Healthcare) before adding to the GNR solution for DNA decoration.

In order to improve reaction rate, linker DNA containg aptamer sequences was pretreated by heating it to 90 °C for 5 min, immediately cooling to 4 °C for 10 min, and keeping it at room temperature for 5 min before adding it to the reaction solution.

Calculation of DNA Loading on the GNR Surface

A 0.5 mL aliquot of concentrated GNRs were modified with DTT on the end sites and stabilized using PEGthiol. After purification, activated 5'-thiol-3'-6-carboxyfluorescein(FAM)-DNA was added (1000:1) and then reacted in dark for 24 h under room temperature. These procedures were the same as that for fabrication of GNR-DNA probes. After that the unconjugated 5'-thiol-3'-FAM-DNA in supernatants was collected via centrifugation (5,000 rpm, 10 min), and quantified via fluorescence spectroscopy (excitation wavelength 492 nm/emission 518 nm). Then the average number of loading DNA per nanorod could be calculated according to the concentration ratio of conjugated DNA and concentrated GNRs.

Sequence of 5'-thiol-3'-FAM-DNA: 5'-SH-C(6)-TTTTTTTCACCCGATCGAG-FAM-3'

References

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Fig. S1 DLS results of GNR side-by-side assemblies with 5 nM and 100 nM concentration of linker DNA



Fig. S2 Hydrodynamic diameters of GNR probes after reaction with different OTA concentrations and 100

nM of linker DNA



Fig. S3 Number of nanorods in assemblies with different OTA concentrations through statistical analysis referring to TEM images