Electronic Supplementary Information

Highly Stable Colorimetric Aptamer Sensor for Ochratoxin A through Optimizing the Sequence with the Covalent Conjugation of Hemin

Jayeon Lee\textsuperscript{a,b}, Chang Hoon Jeon\textsuperscript{a,b}, Sang Jung Ahn\textsuperscript{c}, and Tai Hwan Ha\textsuperscript{a,b}

\textsuperscript{a} Nanobiotechnology (Major), School of Engineering, University of Science & Technology Centre, Daejeon 305-350, Yuseong-gu, Republic of Korea. Fax: 82 42 879 8596; Tel: 82 42 860 4272; E-mail: taihwan@kribb.re.kr

\textsuperscript{b} Research center of integrative cellolomics, Korea Research Institute of Bioscience and Biotechnology (KRIBB), Yuseong-gu, Daejeon 305-806, Republic of Korea. Fax: 82 42 879 8596; Tel: 82 42 860 4272; E-mail: taihwan@kribb.re.kr

\textsuperscript{c} Center for Nano-Imaging Technology, Division of Industrial Metrology, Korea Research Institute of Standards and Science (KRISS), Yuseong-gu, Daejeon 305-340, Republic of Korea

Corresponding author: T. H. Ha, taihwan@kribb.re.kr
1. **Binding affinity of EAD2-hemin complex**

500 nM hemin was prepared in 100 mM phosphate buffer (pH 6.7) with 200 mM NaCl, 20 mM MgCl₂, and 5 mM KCl. Two additional adenosines were added on the 5’-end of original EAD2 sequence. EAD2 was dissolved in same buffer as used for hemin. Hemin and EAD2 mixtures with 6 different molar ratio were mixed and stood for at least an hour, and the dissociation constant ($K_d$) for the DNA-hemin complexes was determined by plotting the absorbance changes of hemin (0.5 μM) at 404nm against DNA concentrations (0 -10 μM). The $K_d$ for EAD2 was determined to be 770 nM.

![Figure S1. A plot for obtaining the dissociation constant for EAD2-hemin](image-url)
2. A plot of enzymatic reaction velocities of OHD₀

Each sample was dissolved in 100 mM phosphate buffer with 200 mM NaCl, 20 mM MgCl₂, and 5 mM KCl. Absorbance was measured for initial 5 min in each experiment. [OHD₀] = 500 nM, [hemin] = 1.5 μM.

Figure S3. A plot of enzymatic reaction velocities of OHD₀ against different OTA concentration.
3. **Linear plots of enzymatic velocities of a few OHD₁ derivatives**

Each sample was dissolved in 100 mM phosphate buffer with 200 mM NaCl, 20 mM MgCl₂, and 5 mM KCl. Absorbance was measured for initial 5 minutes in each experiment.

![Graph showing linear plots of enzymatic velocities of OHD₁ derivatives](image)

**Figure S3.** The linear plot of enzymatic velocities of OHD₁ with various hemin conditions