Inhibitory effect of mercury(II) ion on exonuclease III via gel electrophoresis and microfluidic electrophoresis

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Supplementary Information

1. Preparation of 15\% polyacrylamide gel

2 mL of 10\times TBE buffer (890 mM Tris, 890 mM boric acid, 20 mM EDTA), 7.5 mL of 40\% Acrylamide/Bis-acrylamide (19:1) solution and 200 \textmu L of 10\% ammonium persulfate solution were mixed homogeneously in 10.3 mL of deionized water, where the ammonium persulfate was utilized for the cross linking of acrylamide monomer. As a catalyst, 20 \textmu L of N,N,N’,N’-tetramethylethylenediamin (TEMED), was added and blended uniformly in order to catalyse the cross-linking reaction. The uniform mix was instantly poured into the gel-making kit and followed a 10 holes or 15 holes comb. The polyacrylamide gel would be generated after 1 hour under dark condition at room temperature.

2. Formation of 21 bp dsDNA

25 \textmu L of 15 \mu M probe 21-N and 25 \textmu L of 15 \mu M probe 21-C were added into 125 \textmu L of hybridized buffer solution which contained 20 mM Mops, 100 mM NaNO\textsubscript{3}, pH 7.2, and mixed immediately until well-distributed. After 30 minutes hybridization at room temperature, 21 bp dsDNA N-C with a concentration of 2.14 \mu M was generated in the mixture. Another 21 bp dsDNA AB-PM which was bond by probe AB and probe PM was also made following the above protocol. The final concentration of AB-PM generated was 1.43 \mu M.
3. Degradations of AB-PM and AB by Exo III without Hg\textsuperscript{2+}

Fig S1. The degradation characteristics of Exo III on 21 bp dsDNA AB-PM and 21 mer ssDNA AB. The symbol “-” means absence whereas the symbol “+” means presence. The concentrations of AB-PM and AB were both 1 \mu M.