

Flexible Aptamers Binding Two Different Small Molecules

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Small molecules are widely used in agriculture as fungicide and herbicide, which are harmful to human health and environment. The detection of these chemicals in environment is meaningful, which should be convenient, rapid and reliable. In this study, Screening of the sensitive ssDNA flexible aptamers binding two small molecules was successfully conducted, using immobilization-free Graphene Oxide (GO)-SELEX. By adopting gold nanoparticle based colorimetric assay, we confirmed the specificity of thirteen ssDNA flexible aptamers by both UV-Vis spectrophotometer and naked eye. In addition, Isothermal calorimetry (ITC) and gold nanoparticle based colorimetric are used to obtain the affinity constant, K_d and the sensitivity of the biosensor. These ssDNA flexible aptamers could be developed as an aptasensor which provides in field point of care testing system, to detect small molecules.