

Two Pesticides Detection by using an Exceptional Aptamer Developed by Immobilization-Free Graphene Oxide(GO) SELEX

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Iprobenfos(IBF) and Edifenphos(EDF) are most harmful organophosphorous pesticides used widely for treatment in food products. These substances, as a cholinesterase inhibitor, are of slight acute toxicity and if ingested high concentration, the substance has found to cause serious symptoms such as, dizziness, vomiting, tremor, muscle weakness, and seizure to human health. Therefore, the detection of these pesticides is essentially needed in simplest and easiest way for safety of humankind. Aptamer is ssDNA or RNA also known as the third generation bio-receptor that can bind to their target with high specificity and affinity. Because of specific advantages that aptamers have, such as no limitation to targets, easy modification and labeling, high stability, and cheap, aptasensors are well known biosensor platform. In this study, we successfully developed a unique ssDNA aptamer that can bind to pesticide small molecule targets by using an advanced immobilization-free GO-SELEX method. This aptamer is applied to AuNP colorimetric assay for the simplest and easiest detection of pesticides. The detection limit of this colorimetric aptasensor is 1 μ M, which is comparable to a traditional analysis method.