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研究论文

基于聚合酶反应和发夹型核酸适体的蛋白质荧光检测新方法

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摘要 设计合成了一种发夹型核酸适体(Aptamer), 结合聚合酶反应建立了蛋白质荧光分析新方法. 该核酸适体同时作为蛋白质配体和聚合反应模板, 与靶蛋白特异结合后, 其构象发生了变化, 启动聚合反应, 从而在未直接标记核酸适体的情况下, 通过监测聚合反应进程来检测蛋白质的浓度. 采用该方法检测凝血酶的线性范围为0.5~8 nmol/L, 检测下限为0.5 nmol/L, 为蛋白质检测提供了一种简便快速的非直接标记的荧光分析方法, 有望在蛋白质组学的研究中得到广泛的应用.

关键词 核酸适体 蛋白质检测 聚合酶反应 凝血酶

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Novel Fluorescent Method of Protein Detection Using Hairpin Nucleic Acid Aptamer Based on Polymerase Reaction

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Abstract Aptamers are a new class of oligonucleotides generated from *in vitro* selection with a high affinity and specificity to targets. In this paper, a novel fluorescent method of protein detection was developed *via* hairpin aptamer based on polymerase reaction. The hairpin aptamer was designed as protein ligand and template of the polymerase reaction. When the aptamer was bound to the target protein, it would change to a linear strand and induce the polymerase reaction. Then protein detection was carried out by monitoring the polymerase reaction without directly labeling with the aptamer, with a linear range of 0.5—8 nmol/L and detection limit of 0.5 nmol/L. This proposed method has a potential advantage to design other protein probe with linear aptamer with a complex structure and can be used as a simple and general tool for protein detection.

Key words Aptamer Protein detection Polymerase reaction Thrombin

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