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**Highly sensitive and selective aptasensor for detection of adenosine based on
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Abstract

In this article, a novel aptasensor was fabricated by modifying carbon dots (CDs) with adenosine aptamer (CDs-aptamer) for sensitive, selective and quantitative detection of adenosine (AD). When nano-graphite (NG) as an energy acceptor was added into the CDs-aptamer (energy donor) solution, the fluorescence of CDs-aptamer was quenched due to fluorescence resonance energy transfer (FRET). When AD was present in the solution of CDs-aptamer/NG, the process of FRET was inhibited because of the specific combination between AD and AD aptamer. As a result, the fluorescence of CDs-aptamer was restored due to the dissociation of CDs-aptamer from NG and its change was proportional to the AD concentration. Under the optimized conditions, a linear range was found to be 2–50 nM for the detection of AD with a detection limit of 0.63 nM. Furthermore, the application of the proposed approach was demonstrated in real sample with satisfying results and it showed promise in diagnostic purpose.

Key words: carbon dots; aptamer; adenosine; nano-graphite; fluorescence resonance energy transfer

1. Introduction

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