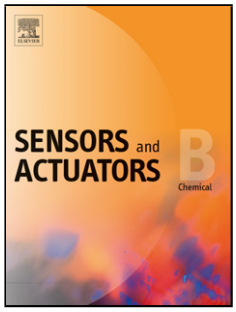

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Exonuclease I assisted fluorometric aptasensor for adenosine detection using 2-AP modified DNA

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Highlights

- A novel sensitive fluorescence method was developed for adenosine detection by using adenosine aptamer, a 2-aminopurine-modified DNA and exonuclease I. This strategy took advantage of the high binding affinity of adenosine aptamer and the susceptibility of 2-aminopurine (2-AP) to the local base stacking environment. This method has not been reported so far.
- 2-AP was selected as a fluorophore to construct this sensor. Compared with the conventional fluorophore reporter and MBs, the 2-AP probe presents good photostability, and it is quenched through its stacking interaction with the adjacent bases without the involvement of any additional quenchers.
- The operations could be accomplished within 1h without expensive nanoparticles and complicated instruments for the whole procedure.
- The proposed sensing system had a good linear relationship between 10 μM and 600 μM (R^2 = 0.9933) and the detection limit was as low as 0.30 μM. All these results demonstrated the feasibility and potential applications of the sensor in adenosine sensing and analysis.