An Electrochemical Sensing Method for Aflatoxin B1 Detection Based on Pt-coordinated Titanium-based Porphyrin MOF

Dandan Meng^{1,*}, Xiaolu Gan² and Tian Tian¹

¹ School of Medical Laboratorial Technics, Xinyang Vocational and Technical College, Xinyang, 464000, PR. China

² School of Tourism, Xinyang Vocational and Technical College, Xinyang, 464000, PR. China

*E-mail: mengdandan_dd@163.com

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Aflatoxin is extremely carcinogenic and is one of the most important factors affecting the safety of the food industry. The traditional culture method is not able to satisfy the demand for rapid and sensitive detection in modern industry due to its shortcomings such as poor sensitivity. In this work, a Pt-coordinated titanium-based porphyrin metal organic framework (Ti-MOF-Pt) was prepared for fabrication of aflatoxin B1 (AFB1) aptamer sensor. The high-specific surface area provided by MOF and excellent electrochemical property provided by Pt can enhance the sensing performance. After optimization, the proposed AFB1 aptamer sensor can exhibit a linear detection range between 0.1-75 µg/L. The detection limit can be calculated as 31 ng/L. In addition, the proposed aptamer sensor has also presented an excellent selectivity.

Keywords: Aflatoxin B1; Aptamer sensor; Methylene blue; MOF; Food analysis

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