Develop a series of ultra-sensitive detection methods for mycotoxins

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Mycotoxins are harmful to people's health because of their widespread existence and lethal toxicity. It is of great significance to realize the detection of mycotoxins at ultra-low concentration for both food safety and the development of high sensitivity detection method of biological small molecules. Here, we took mycotoxin as the target molecule, studied the structure of the aptamer, and enhanced the affinity between aptamer and mycotoxin by the evolution of the structure of the aptamer. Based on the new aptamers, we developed a series of aptasensors to achieve the ultra-sensitive detection of mycotoxins. Label-free fluorescence aptasensors were developed using crystal violet and SYBR Green I as probes. Simple label-free quencher fluorescence platforms were established by the quenching ability of guanine and G-quadruplex. And chemiluminescence aptasensor was developed based on split DNAzyme. We improved the limit of the detection from 20.0 nM to 0.10 nM.