Seminar 2

Cancer detection based on G.Quadruplex aptamers

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Abstract

Aptamers are small-sized RNA or ssDNA ligands with a unique structure, which have high specificity and affinity to their targets. Due to its nucleic acid characteristics, the aptamer can be produced at relatively low cost, and can easily be modified. G-quadruplex (G4) is a special type of DNA structure formed on non-canonical Hoogsteen-type base pairing. G4 DNA has attracted growing interest since it can be used for both target recognition and signal transduction. G4 is a key component of many aptamers for target detection, as it can serve as a peroxidase mimicking DNAzyme, upon binding to hemin. This process can catalyze the H2O2-mediated the numbers should be subscript oxidation of 3,3,,5,5- tetramethyl benzidine sulfate (TMB) or 2,2,-azino-bis(3-ethylbenzothiozoline-6- sulfonic acid) (ABTS), resulting in a colour change. Compared with traditional protein enzymes, hemin/G4 DNAzyme exhibits a number of advantages such as high thermal stability, ease of synthesis, and low cost, which makes it an ideal candidate for colorimetric biosensor production . In this seminar, the identification of cancer targets based on aptamers attached to G4 will be discussed.

Keywords: Aptamer, G-Quadruplex, Cancer