In vitro selection of SPINK1 specific binding DNA aptamers for cancer detection

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Hepatocellular carcinoma (HCC) is the third as a cause of death from cancer. Serine protease inhibitor Kazal type 1 (SPINK1) is a protein that is encoded by the SPINK1 gene in human beings, and has been associated with HCC. SPINK1 can promote development and growth of HCC by stimulating the epidermal growth factor receptor (EGFR). SPINK1 can be classified as an autocrine growth factor, which is potentially druggable for treatment of an aggressive form of HCC. We Several reports show that Serum α-fetoprotein(AFP) is the most commonly used circulating tumor marker, and can be detected using a commercially available ELISA kit. However, these methods are time-consuming, high cost and low sensitivity. Recently, aptamers are gaining increasing interest as an alternative material of antibodies, because of low cost, easy modification, high stability and specificity. We carried out the SELEX (Systematic Evolution of Ligands by EXponential enrichment), selected the specific binding aptamers to SPINK1 through Real-time PCR and SPR. The development of aptasensor based on SPINK1 specifically binding DNA aptamers can be readily applied to rapid and sensitive detection of SPINK1 from patients with cancer.