TECH OFFER

Non-Invasive Alzheimer's Disease Diagnostic Kit

OVERVIEW

In every 3 seconds, there is one person diagnosed with Alzheimer's Disease (AD). As the aging population is expanding, dementia has become a tremendous socioeconomic issue. Now there are over 50 million of people living with dementia and AD accounted for over 2/3 of the cases. Unfortunately, there is no cure for AD, only early diagnosis and treatment can ameliorate the symptoms and delay its progression. Several biomarkers in cerebrospinal fluid (CSF) have been recognized and established for AD diagnosis with a high diagnostic accuracy over 85%. However, the collection of CSF is invasive and causes discomfort and side effect to the patients. On the other hand, the collection of urine and saliva is relatively simple and non-invasive. Our technology provides a solution for early Alzheimer's disease diagnosis by using magnetic nanoprobe for sensitive detection of the target biomarker in different body fluids including blood serum, saliva and urine. In addition, our detection assay has a wide dynamic range that allows the quantification of biomarkers in a minute amount (a few microliter) of samples. It is proven practically useful for different body fluids. It is a non-invasive, rapid and cost-effective alternative for accurate diagnosis of AD.

TECHNOLOGY FEATURES & SPECIFICATIONS

Our detection assay is an immunocomplex based approach with magnetic nanoprobe for sensitive detection of the target biomarker in different body fluids including blood serum, saliva and urine. Once the target biomarker is captured, a sandwich immunocomposite will be formed. The immunocomposite will then be labelled by our tailor-made fluorophore which gives amplified fluorescence signal for quantification. When comparing to commercially available ELISA kits, our new diagnostic kit provides additional options on the sample types, and allows testing on saliva and urine. Furthermore, our assay is 100x more sensitive than commercially available ELISA kit. The limit of detection (LOD) is down to femto (10E-15) molar regime (0.104 pg/mL), that means the concentration requirement of AD biomarkers being detected for the new kit is much lower than the cut-off for those ELISA kits. Besides, our new kit takes only 1.5 hrs to obtain result while the ELISA kit may generally take 18 hrs for that. Last but not least, the cost of the new kit is about 100 USD, which is 50 times cheaper than the ELISA kit. Key features: - Non-invasive - Ultra-sensitive (100x more sensitive than commercially available ELISA kit) - Cost-effective, simple and direct AD early detection and diagnostics - Low sample consumption (a few µL)

POTENTIAL APPLICATIONS

With our novel nanoparticle-based technology, a diagnosis kit is developed for: - High-throughput detection of Alzheimer's Disease biomarkers - Non-invasive point-of-care diagnosis of Alzheimer’s Disease Besides, two different diagnostic approaches will be further developed: 1) A non-invasive and user-friendly magnetic nanoparticles platform for direct quantification of circulating biomarkers in body fluids. 2) A novel biomarker specific MRI contrast agent for in-vivo imaging of the disease-associated protein plaque in the brain. These diagnostic tools could provide a practical platform for population-wide screening for neurodegenerative diseases.

BENEFITS

Early detection and diagnostic for neurodegenerative diseases, which is cost-effective, simple and quick - Measure the subtle...
changes in the expression profile of disease associated biomarkers