Washington University in St. Louis
Office of Technology Management

PET TRACERS FOR DETECTION OF EARLY STAGE ALZHEIMER'S DISEASE

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T-013525

Technology Description

Researchers at Washington University in St. Louis have developed PET radiotracers to image amyloid beta (A-beta) at early stages of Alzheimer's Disease (AD). For AD treatment to be effective, it may have to be administered during the preclinical stage. As such, there is a great need to identify biomarkers for the disease that are present during the early stage. A-beta is thought to play a starting role in the AD pathogenic cascade. Thus, it would be beneficial to investigate the temporal relationship between amyloid deposition, neuronal loss and cognitive decline. However, tools to image A-beta are suboptimal. To overcome the limitations, the inventors have generated new A-beta radiotracers for use with PET imaging. This technology provides PET tracers with enhanced sensitivity and specificity and the potential to enable A-beta imaging at early stages of AD.

Stage of Research

In vivo imaging and pharmacological studies show the tracers are effective and have good specificity for imaging diffuse plaque associated with early stage AD.

Publications

- Sundaram GS, Dhavale DD, Prior JL, Yan P, Cirrito J, Rath NP, Laforest R, Cairns NJ, Lee JM, Kotzbauer PT, Sharma V. Fluselenamyl: A Novel Benzoselenazole Derivative for PET Detection of Amyloid Plaques (Aβ) in Alzheimer's Disease. Sci Rep. 2016 Nov 2;6:35636.
- Bhandari, T. Earlier Alzheimer's diagnosis may be possible with new imaging compound. The Source- A Washington University in St. Louis publication. 2016 Nov. 2.

Applications

- A-beta targeted PET tracer:
  - Image early stage AD
  - Monitor efficacy of A-beta modifying therapeutics

Key Advantages

- Can be used to determine A-beta burden in early stages of AD
- Targets diffuse and fibrillar forms of A-beta
- High initial brain penetration
- Facile clearance from non-targeted regions

- High radiochemical yield

Patents

- Issued US Patent- Heterocyclic molecules for biomedical imaging and therapeutic applications. Patent number 10,335,504

Related Web Links

- Dr. Sharma profile