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NOVEL PET/SPECT RADIOPHARMACEUTICAL FOR IMPROVING BIOMEDICAL IMAGING

Piwnica-Worms, David, Sharma, Vijay, Sivapackiam, Jothilingam

Gill, John

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Technology Description

Researchers at Washington University in St. Louis have developed a novel positron emission tomography (PET) radiopharmaceutical for myocardial perfusion imaging. Myocardial perfusion scintigraphy is widely employed in the evaluation of patients with heart disease. Several agents are currently commercially available for perfusion imaging. However, all these agents suffer from one or more shortcomings, making them less than ideal for cardiac perfusion studies.

This novel composition of matter employs gallium-based radiopharmaceuticals, Ga-68 for PET and Ga-67 for SPECT, to improve the noninvasive delineation of myocardial perfusion, thus enhancing the diagnosis and treatment of coronary heart disease. Additionally, this invention can enable the noninvasive monitoring of the blood-brain barrier in neurodegenerative diseases and can improve the assessment of tumors to stratify patient populations for chemotherapeutic treatments.

Publications

- Sivapackiam J, Sharma M, Schindler TH, Sharma V. PET Radiopharmaceuticals for Imaging Chemotherapy-Induced Cardiotoxicity. Curr Cardiol Rep. 2020 Jun 19;22(8):62.

Applications

- Myocardial perfusion imaging
- Diagnosis and treatment of coronary heart disease
- Monitoring the function of the blood-brain barrier in neurodegenerative diseases
- Imaging of drug-resistant tumors in cancer chemotherapy

Key Advantages

- Ga-67 agent is synthesized, purified, and formulated in less than 60 minutes
- Ga-68 has a longer half-life than current agents used for myocardial perfusion imaging
- Ga-68 is cyclotron independent and can be easily installed in small nuclear medicine facilities
- These agents have an enhanced uptake into the heart, decreased liver retention, and increased clearance from non-cardiac and adjoining tissues

Patents

Patent issued - US9579408B2

Related Web Links – Vijay Sharma Profile; Sharma Lab