Recombinant Probe PBT-FC for High Resolution Renal Scintigraphy

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Technology description

Short Description

A new renal scintigraphy imaging probe that offers improved 3D high resolution images of the kidney.

Background

To evaluate kidney filtration functions or detect any renal abnormalities, patients undergo renal scans that use radionuclide-bound tracers. Common tracers for the nuclear isomer Technetium-99m (99-Tc) are diethylenetriamine pentaacetic acid (DTPA), mercaptoacetyltriglycine (MAG3), and dimercaptosuccinic acid (DMSA). After injection, the tracers enter blood circulation and then follow the path of renal clearance. Single-photo emission computer tomography (SPECT) images reflect the detailed location of urinary retention through the visualization of radionuclide accumulation in the kidney. The development of protein-based carrier probes for renal scintigraphy is a relatively untapped market that can help cut healthcare cost and improve diagnostic capabilities.

Abstract

To perform renal scans and diagnostics, radionuclide bound tracers are often prescribed. Tracers are used to chelate radionuclides like 99Tc which can then be imaged to determine the net accumulation of the radionuclide by the kidney. Current tracers offer a limited time during which the SPECT camera can collect radio signals, thus low resolution images are produced. Northwestern researchers have developed a novel tracer design that uses a recombinant fusion protein, PBT-Fc, to carry 99Tc, which increases the tracer half-life and offers more desirable in vivo kinetics. The new PBT-Fc pobe will improve SPECT imaging quality in terms of calculating filtration dynamics and improve image resolution during clinical diagnosis. The probe may also a useful screening tool for renal protective drugs in rodent studies.

Application area

Renal scintigraphy using SPECT

Renal imaging diagnostic tool

Studying animal models and screening renal protective drugs

Advantages

Improved, more accurate renograms
Increased SPECT image acquisition time
Higher resolution 3D kidney filtration maps

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