

Clinical application of $^{62}\text{Zn}/^{62}\text{Cu}$ positron generator: Perfusion and plasma pool images in normal subjects

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We have developed a new $^{62}\text{Zn}/^{62}\text{Cu}$ positron generator, and applied it for PET imaging of perfusion and plasma volume in 5 normal subjects. The generator makes it possible by a simple procedure to obtain ^{62}Cu eluate and labeling compounds sufficiently every 40–60 minutes. ^{62}Cu labeled pyruvaldehyde bis(N^4 -methylthiosemicarbazone) copper II (^{62}Cu -PTSM) was employed for cerebral and myocardial perfusion imaging and ^{62}Cu labeled human serum albumin-dithiosemicarbazone (^{62}Cu -HSA-DTS) was used for plasma pool imaging. The images of cerebral blood flow, cerebral plasma volume and myocardial perfusion were excellent. In addition, the analysis of tissue activity and blood activity demonstrated the microspheric character of ^{62}Cu -PTSM. Correction of arterial activity with the standard disappearance curve of ^{62}Cu -PTSM suggested the possibility of quantifying blood flow. The results of this study indicate the capability of the $^{62}\text{Zn}/^{62}\text{Cu}$ generator for wide clinical use without an in-house cyclotron.

Key words: ^{62}Cu -PTSM, ^{62}Cu -HSA-DTS, PET, perfusion tracer, plasma pool imaging