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^{52g}Mn production routes for multi-modal imaging applications

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The radionuclide ^{52g}Mn is of significant medical interest for the innovative PET-MRI multi-modal imaging technique. In this study we compare its standard cyclotron production route $^{nat}\text{Cr}(p,x)^{52g}\text{Mn}$ with the alternative reaction $^{nat}\text{V}(\alpha,x)^{52g}\text{Mn}$. The theoretical calculations are performed by a suitable tuning of the nuclear level density parameters of the TALYS reaction code, with the aim to obtain a good agreement with the experimental cross sections. The production route with ^{nat}V results in a more favorable radionuclidic purity than with ^{nat}Cr . Dosimetric studies are performed to establish the time frame in which ^{52g}Mn can be used with an acceptable dose to the patient.

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