Optimized procedures for manganese-52: Production, separation and radiolabeling - DTU Orbit (17/04/2019)

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Pressed chromium-powder cyclotron targets were irradiated with 16MeV protons, producing $^{\text{52}}\text{Mn}$ with average yields of 6.2±0.8MBq/µAh. Separation by solid-phase anion exchange from ethanol-HCl mixtures recovered 94.3±1.7% of $^{\text{52}}\text{Mn}$ and reduced the chromium content by a factor of 2.2±0.4×10^5. An additional AG 1-X8 column was used to remove copper, iron, cobalt and zinc impurities from the prepared $^{\text{52}}\text{Mn}$ in 8M HCl. The macrocyclic chelator DOTA was rapidly radiolabeled with $^{\text{52}}\text{Mn}$ in aq. ammonium acetate (pH 7.5R.T.) with a radiochemical yield >99% within 1min and was stable for >2 days in bovine serum. The improved separation and purification methodology facilitates the use of 52Mn in basic science and preclinical investigations.

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