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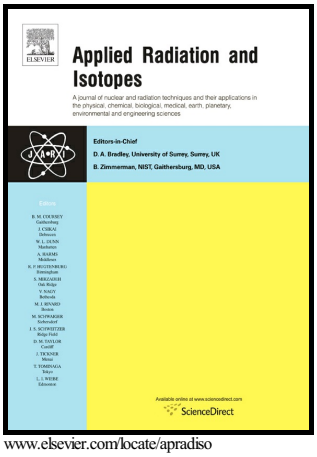

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Estimation of the production of medical Ac-225 on thorium material via proton accelerator

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Abstract:

In the present study, we aimed at estimating the production of medical Ac-225 radionuclide via proton accelerator in the energy range E_{proton}=1000 →1 MeV under certain conditions, on thorium target material instead of uranium due to the low abundant of uranium in nature. Hence, to produce the medical Ac-225, cross-section, separation energy was calculated by taking into account the proton induced reaction processes that were simulated to estimate activity and, yield of the product up to 1000 MeV. Moreover, the calculated integral yields of reactions were presented. For achieving the aim, we have put forward the X-PMSP program to derive mass stopping power from a new perspective.

Keywords

Proton accelerator; Radioisotope; Separation energies; Stopping power; Thorium

1. Introduction