

## Production Radionuclide Therapy 161-Terbium Using by Talys1.6 and Empire 3.2 Codes in Reactions Cyclotron

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**Abstract :** In this study, the production of terbium-161 as new therapeutic radionuclide was investigated using TALYS1.6& EMPIRE 3.2 codes. For this purpose, cross section for the reactions reactor to produce 161Tb were extracted by mean of this code In the following step, stopping power of the reactions reactor was calculated by SRIM code. The best reaction in the production of 161Tb is  $^{160}\text{Gd}(d,n)^{161}\text{Tb}$  Production yield of the 161Tb was obtained by utilization of MATLAB calculation code and based on the charged particle reaction formalism. The results showed that Production yield of the 161Tb was obtained 0.8 (mci/ A\*h).

**Keywords :** terbium161, TALYS1.6, EMPIRE3.2, yield, cross-section

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