عنوان مقاله:

Evaluation of the Effect of Source Geometry on the Output of Miniature X-ray Tube for Electronic Brachytherapy through Simulation

محل انتشار:

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خلاصه مقاله:

Objective: The use of miniature X-ray source in electronic brachytherapy is on the rise so there is an urgent need to acquire more knowledge on X-ray spectrum production and distribution by a dose. The aim of this research was to investigate the influence of target thickness and geometry at the source of miniature X-ray tube on tube output.Method: Five sources were simulated based on problems each with a specific geometric structure and conditions using MCNPX code. Tallies proportional to the output were used to calculate the results for the influence of source geometry on output.Results: The results of this work include the size of the optimal thickness of ۵ miniature sources, energy spectrum of the sources per ۵۰ kev and also the axial and transverse dose of simulated sources were calculated based on these thicknesses. The miniature source geometric was affected on the output x-ray tube.Conclusion: The result of this study demonstrates that hemispherical-conical, hemispherical and truncated-conical miniature sources were determined as the most suitable tools.

کلمات کلیدی:

Monte Carlo, Electronic Brachytherapy, Target Optimization, Energy Spectrum, Miniature Source