ABSTRACT

Hamidatul Faqqiyyah, 2024, Initial study of pancreatic cancer dose analysis based on *Boron Neutron Capture Therapy* (BNCT) using *the Particle And Heavy Ion Transport Code System* (PHITS) Program.

The purpose of this study was to analyze the dose of pancreatic cancer in boron neutron capture therapy (BNCT). The research simulation applied the PHITS program version 3.34 which used the Monte Carlo method and a 30MeV cyclotron as a neutron source. Variations in Boron concentration used 100, 110, 120, 130, 140, and 150 μg/g of cancer tissue with the front irradiation direction (Anterior Posterior - AP) to determine the effective dose. We assumed that there was a lesion in the tail of the pancreas near the hilus of the spleen measuring 32 mm x 31 mm x 29 mm. In this study, a perfect thermal neutron equilibrium will never be achieved in a nuclear reaction. Differences in location, size of cancer and number of simulated particles causes differences in dose values. Each OAR is estimated to be safe and will not experience deterministic effects.

Keywords: BNCT, Pancreas, PHITS