

ABSTRACT

In optimizing radiotherapy treatment in breast cancer where the target is located on the surface, boluses are needed to increase the dose at the target surface. Therefore, it is necessary to use bolus materials to ensure an even and optimal dose distribution on the surface. The suitability of the bolus material to the body tissue is an important factor in ensuring its effectiveness in inhibiting the movement and scattering of radiation particles. This study aims to analyze the comparison of the measured dose in the parallel ionization chamber plan and the treatment planning system on the silicone rubber bolus and the bolus available in the radiotherapy installation (plasticine). The research method is by means of bolus made with silicone rubber and 4% catalyst with two variation of applicator field area 6x6 cm and 10x10 cm and variation of bolus thickness 0,3 cm, 0,5 cm, 1 cm, 1,5 cm, 2 cm with a bolus area size of (15x15) cm². This study gives the result of a 10x10 cm applicator at a thickness variation of 0,3 cm with a measured dose value of 140,40 cGy at TPS and 139,02 cGy at measurement. At 0,5 cm thickness variation the dose distribution was 107,28 cGy at TPS and 105,28 cGy at measurement. The 1 cm thickness variation dose distribution value is 46,22 cGy in the TPS and 46,27 cGy in the measurement. At a thickness variation of 1,5 cm the dose distribution at TPS was 2,30 cGy and measurement was 2,33 cGy. At a thickness of 2 cm, the dose distribution at TPS was 1,30 cGy and the measurement was 1,29 cGy. While in the 6x6 cm applicator, the dose distribution value at a thickness of 0,3 cm was 133,90 cGy in TPS and 134,99 cGy in measurement. The dose distribution at a thickness of 0,5 cm was 104,40 cGy in the TPS and 103,26 cGy in the measurement. At thickness of 1 cm, the dose distribution was 40,10 cGy in TPS and 39,54 cGy in measurement. At thickness of 1,5 cm, the dose distribution result were 2,0 cGy at TPS and 2,28 cGy at measurement. At a thickness variation of 2 cm, the dose distribution is 1,30 cGy TPS and 1,26 cGy measurement.

Kata Kunci : Bolus, radiotherapy, ionization chamber plan parallel, silicone rubber, surface dose