

ABSTRACT

This study aims to evaluate and compare the calculation of absolute photon beam output dose from a linear accelerator (LINAC) using two editions of the TRS-398 dosimetry protocol published by the IAEA, namely the 2000 edition and the revised 2024 edition. Measurements were carried out on 6 MV and 10 MV photon beams using a Farmer-type ionization chamber and a water phantom. The results show that the absolute dose calculated using TRS-398 (2024) has a smaller deviation compared to the 2000 edition. This improvement in accuracy in the revised edition is attributed to the refinement of k_q data through Monte Carlo simulations and the inclusion of a broader range of chamber types and beam qualities. All output dose values remained within the international tolerance limit of below 3%. At 6 MV, the deviation was 0.51% (TRS-398, 2000) and 0.26% (TRS-398, 2024), while at 10 MV the deviation was 0.60% (TRS-398, 2000) and 0.12% (TRS-398, 2024). Based on these results, the 2024 edition of TRS-398 is recommended for modern clinical dosimetry practice.

Keywords: TRS-398, absolute dose, photon, linac, k_q , dosimetry.