

Radiobiological effect of secondary electrons and radicals in radiotherapy

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More than 50% of cancer treatments prescribe a given number of radiotherapy sessions. Traditionally, both the absorbed dose (AD) and the radiobiological effectiveness (RBE) of the irradiation is referred to the induced ionisation in water. Recent studies of radiation damage at the molecular suggest that the effect of the generated secondary electrons and radicals may not follow this proportionality. In this presentation we review the most representative radiotherapy techniques and the theoretical and experimental studies carried out by the CSIC (Madrid) group and their collaborators to introduce the effects of these secondary particles into the treatment plans. In particular, the relevance of these studies in the recent proton and heavy ion cancer treatment facilities will be outlined.