Kinetics of the Radicals Induced in Gamma Irradiated Sulfafurazole: An EPR Study

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The spectroscopic and kinetic features of the radiolytic intermediates produced in gamma irradiated sulfafurazole (SFZ) were investigated at different temperatures in the dose range 5 – 50 kGy using EPR and IR techniques. The imodiation produced two species (A, B) in SFZ. The heights of the peaks were used to monitor the temperature, time dependent and kinetic features of the radical species contributing to the EPR spectrum. The applicability of EPR technique for monitoring radiosterilization of SFZ is discussed. The radiation yield of solid SFZ was found to be very low (G = 0.16), and basing on this it was concluded that SFZ and SFZ containing drugs can be safely sterilized by radiation. The EPR data were used to characterize the contributing radicals produced in gamma irradiated SFZ. No definite difference was observed between unirradiated and irradiated IR spectra of SFZ.

Key words: Radiosterilization; Sulfafurazole; Radical Kinetics; EPR; IR.