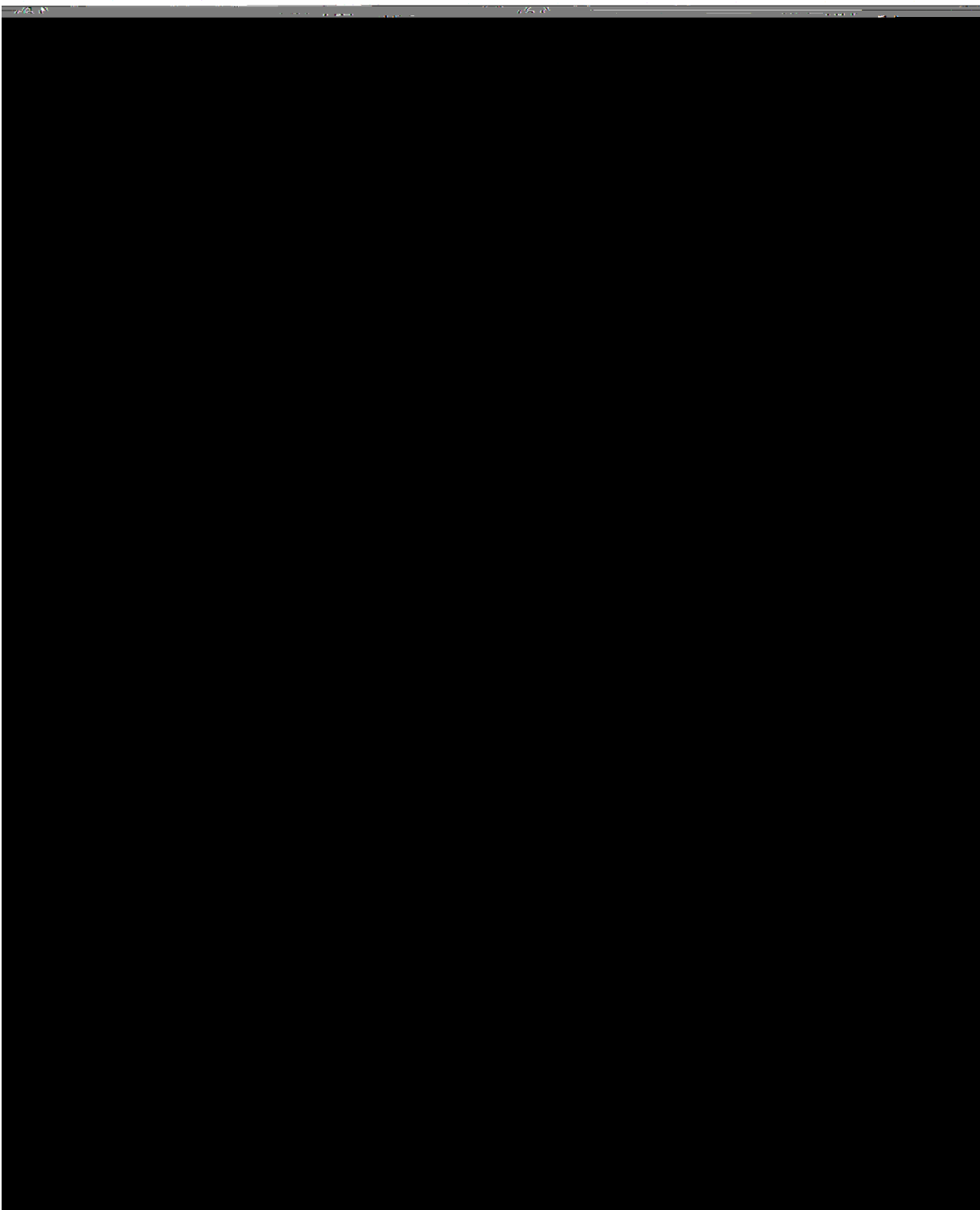


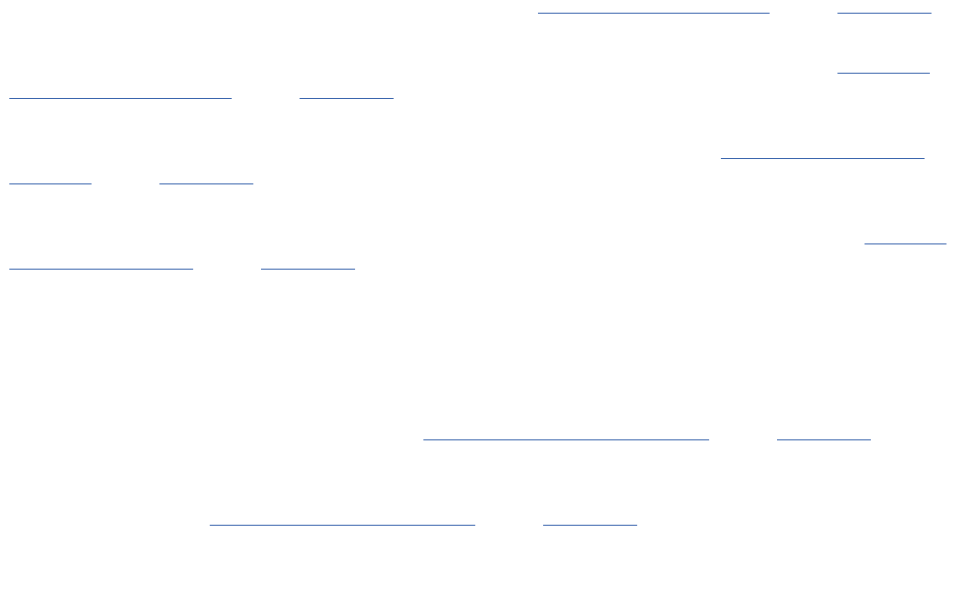
absorption intensity for three sublevels of O and N atoms was measured. Ar-CAP was located 8 mm above the measured region. To remove background absorption due to atmospheric gases, N₂ gas was used as a purge gas to maintain the pressure of the chamber at atmospheric pressure. The absorption intensity of the O₂ gas feed was measured using the transition lines of H₂

Furthermore, the absolute densities of atomic species were measured by VUVAS. The average numbers of O atoms were $6.3 \times 10^{13} \text{ cm}^{-3}$ at 8 mm distance, $4.5 \times 10^{13} \text{ cm}^{-3}$ at 13 mm, and $2.3 \times 10^{13} \text{ cm}^{-3}$



irradiation (7.5 Gy), the apoptosis-inducing efficacy of both treatments was similar reflecting the superiority of X-rays in inducing cell killing.

Our EPR-spin trapping study revealed that no pyrolysis or direct degradation radicals were formed in aqueous solutions containing non volatile solutes. Intracellularly, $\cdot\text{OH}$ radicals and OCl^- were detected in large amounts. The latter may have resulted from the reaction between $\cdot\text{OH}$ radicals and chloride anions (Cl^-) that are abundant in cells. Unlike OCl^- , it is not clear whether $\cdot\text{OH}$ radicals were formed intracellularly or traversed from the extracellular milieu through the cell membrane. The elucidation of the mechanism by which reactive oxygen and



29. Kondo T, Krishna CM, Riesz P. Sonolysis of concentrated aqueous solutions of non-volatile solutes. Spin trapping evidence for free radicals by pyrolysis. *Radiat Res* 1989; 118: 211-229. PMID: