

# PHOTOINTERACTION OF BENZOPHENONE TRIPLET WITH LYSOZYME

ENCINAS, M. V.

LISSI, E. A.

VASQUEZ, M.

OLEA, A. F.

SILVA, E.

**Abstract** The quenching of the benzophenone triplet by lysozyme and its constituent amino acids in aqueous solutions have been studied. Native lysozyme quenches the benzophenone triplet with a high rate constant,  $4 \times 10^9 \text{ M}^{-1} \text{ s}^{-1}$ . The quenching process takes place with production of significant amounts of free ketyl radicals,  $\phi_{\text{ketyl}}=0.56$ , but with a very low benzophenone consumption yield (0.022). The consumption yield is considerably smaller than that observed for the free amino acids. This difference can be explained in terms of a dominant back hydrogen transfer to the protein in the disproportionation of the free radicals produced. Reduced and carboxymethylated lysozyme shows a higher quenching rate ( $7.8 \times 10^9 \text{ M}^{-1} \text{ s}^{-1}$ ) and a larger benzophenone consumption yield (0.07). The deactivation of the benzophenone triplet by the native protein leads to its inactivation, with a quantum yield of 0.01. Tryptophan and arginine residues are destroyed with a quantum yield of 0.01. In the modified enzym