

Light-induced Free Radical Oxidation of 2-Oxo-1,2,3,4-tetrahydropyrimidines

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A variety of 4-substituted 5-acetyl- and 5-carboethoxy-2-oxo-1,2,3,4-tetrahydropyrimidines were oxidized under UV irradiation in the presence or absence of benzoyl peroxide. The nature of the substituents on the 4- and 5-positions of the heterocyclic ring affects the rate of photo-oxidation, and irradiation of these compounds in the presence of benzoyl peroxide decreases the time of reaction drastically. Removal of 4-H by a benzoyloxy radical under formation of a trihydropyrimidinoyl radical intermediate occurs in the rate-determining step. The stability of this benzylic and allylic radical intermediate is affected by the nature and the position of the additional substituent on the phenyl group located at C-4.

Key words: Benzoyl Peroxide, Dihydropyrimidinones, Photo-oxidation, Substituent Effects, Tetrahydropyrimidinones