

PHOTOCHEMICAL SYNTHESIS OF SPIRO- β -LACTAMS

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2-(*N*-Acyl-*N*-alkylamino)cyclohex-2-enones are known to take a variety of reaction courses, depending upon the substituents on the nitrogen atom. In connection with our interest in the intramolecular [2+2] photocycloaddition, we have examined the photochemical behavior of 2-(*N*-acyl-*N*-allylamino)cyclohex-2-enones (1). Thus, irradiation of (1a) in acetone with a 300W high-pressure mercury lamp in a Pyrex vessel gave two products, (2a) (52%) [isolated as its hydrate form (2a')] and (3) (2%). Similar irradiation of (1b) gave (2b) in 61% yield. In contrast, irradiation of (1c) gave two products, (2c) (26%) and the β -lactam (4) (20%). We have then examined the photochemistry of 2-(*N*-acyl-*N*-alkylamino)cyclohex-2-enones (5), with the hope that a new synthetic route to the spiro- β -lactams might result. In fact, irradiation of (5a-d) in acetone was found to give the corresponding β -lactams (6a-d) in moderate yields.

