Photoalkylation of Glycine Derivatives

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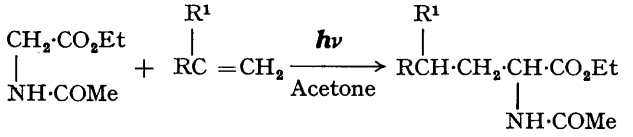
WE report the light-induced alkylation of *N*-acetylglycine ethyl ester with terminal olefins and with toluene.

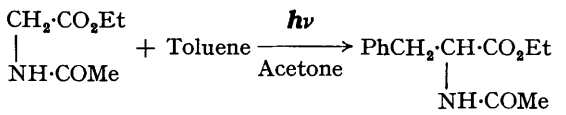
The reaction was effected by irradiation[1] of a solution of the olefin (0·1 mole) and *N*-acetylglycine ethyl ester (0·7 mole) in t-butyl alcohol in

[1] Hanovia type S 200 w high-pressure quartz mercury-vapour lamp.

the presence of acetone at room temperature. In the case of toluene the reaction was effected by irradiation of the amido-ester and toluene in acetone. Hex-1-ene and *N*-acetylglycine ethyl ester gave ethyl DL-*N*-acetyl-2-amino-octanoate, while oct-1-ene led to ethyl DL-*N*-acetyl-2-amino-decanoate. Toluene and *N*-acetylglycine ethyl ester gave DL-*N*-acetylphenylalanine ethyl ester.[2] Similarly, mixtures of *N*-acetylglycine ethyl ester and but-1-ene, isobutene, hex-1-ene, or oct-1-ene and acetone upon exposure to sunlight lead to the corresponding derivatives of DL-norleucine, DL-leucine, DL-2-amino-octanoic, and DL-2-amino-decanoic acids. In all cases products were identified by analysis and by direct comparison (m.p., infrared spectrum, thin-layer and paper chromatography) with authentic samples.



$R = Et, R^1 = H; \quad R = Bu, R^1 = H; \quad R = C_6H_{13}, R^1 = H; \quad R = R^1 = Me$



Alkylation at other "active" positions in the glycine derivative also occurred.[3] The photo-alkylation of a variety of derivatives of glycine is under investigation.

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[2] Yields, based on hydrocarbon employed, range from 10–12% for terminal olefins and 3–5% for toluene.

[3] *Cf.* (a) J. C. Allen, J. I. G. Cadogen, and D. H. Hey, *J. Chem. Soc.*, 1965, 1918. (b) J. N. Ogibin and G. J. Nikishin, *Izvest. Akad. Nauk, S.S.S.R., Ser. Khim.*, 1965, 378 and references there cited.