

SYNTHESIS OF HETEROCYCLIC COMPOUNDS USING DIKETENE:
ON THE ADDITION REACTION
TO THE C=C DOUBLE BOND OF DIKETENE

Tetsuzo Kato, Masayuki Sato, Nobuya Katagiri, and Yoshinori Kitagawa

Pharmaceutical Institute, Tohoku University,

Aobayama, Sendai 980

Reaction of diketene with ethyl diazoacetate gave furanone derivatives, 2,5-dihydro-2-ethoxycarbonyl-3-methylfuran-5-one and 2,5-dihydro-4-ethoxycarbonyl-methylfuran-2-one, together with (trans-2-ethoxycarbonyl-1-hydroxycyclopropane)-acetic acid β -lactone.

Diketene reacted with diazoacetophenone under the same conditions to give two isomeric spiro compounds, (trans-2-benzoyl-1-hydroxycyclopropane)acetic acid β -lactone and (cis-2-benzoyl-1-hydroxycyclopropane)acetic acid β -lactone.

Similarly, p-methoxy- α -diazoacetophenone was transformed to (trans-2-(p-methoxybenzoyl)-1-hydroxycyclopropane)acetic acid β -lactone and (cis-2-(p-methoxybenzoyl)-1-hydroxycyclopropane)acetic acid β -lactone.

Photochemical reaction of diketene with benzophenone gave 1,1-diphenyl-2,5-dioxaspiro(3,3)heptan-6-one, 4-(hydroxydiphenylmethyl)-2(5H)-furanone, and 1,1,6,6-tetraphenyl-2,5-dioxaspiro(3,3)heptane.