NOVEL SYNTHETIC METHODS OF DIHYDRO-4-PYRONE, γ-BUTYROLACTONE, AND 3(2H)-FURANONE BY USING α,α'-*DIHALO KETONE OR* α-*MONOHALO KETONE*

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Novel synthetic methods of dihydro-4-pyrones, γ-butyrolactones, and 3(2H)-furanones by using α,α'-dihalo ketone or α-monohalo ketone as the starting material will be presented. Reaction of dihalo ketone (1) with enolates of acylacetic esters (2) gave dihydro-4-pyrone derivatives (3) as the products of Favorskii-type rearrangement (eq. 1). Reaction of monohalo ketone (4) and aromatic aldehydes (5) in *ethanolic KOH afforded* γ-butyrolactones (6) as the result of the conbination of aldol condensation and Favorskii rearrangement (eq. 2). The reaction of 4 and 5 in aqueous KOH gave aldol product 7, which was successfully converted to 3(2H)-furanone (8) (eq. 3). The furanone 8 was also prepared by $TiCl_4$-catalyzed reaction of silyl enol ether (9) and acid chloride (10) (eq. 4). Attempts to extend the reactions outlined in eq. 3 and 4 for the synthesis of bullatenone (11) and geiparvarin (12) will be also discussed.