NEW METHODS FOR THE SYNTHESIS OF 3(2H)-FURANONES AND 2(5H)-FURANONES

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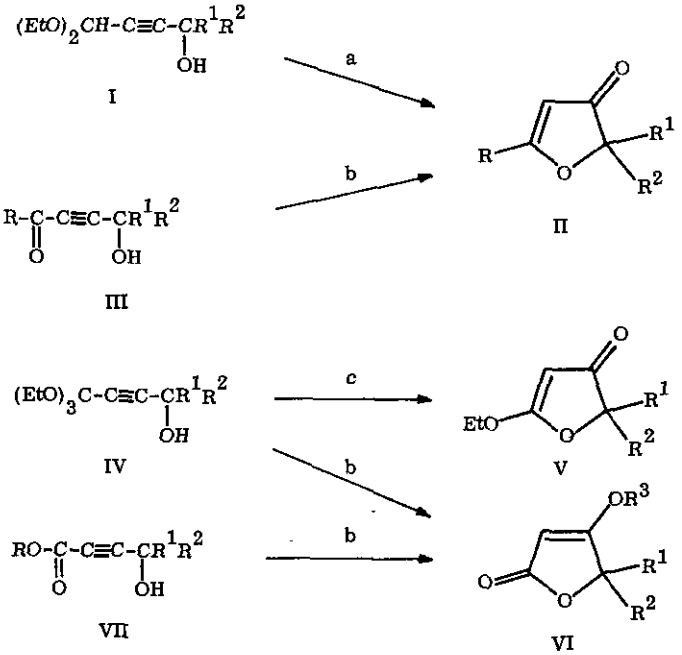
New procedures for the synthesis of 3(2H)-furanones and 2(5H)-furanones will be reported. 4-Hydroxy-2-alkynal diethyl acetals (I) are transformed into 3(2H)-furanones (II, R = H) with sulfuric acid and methanol (condition a). The action of a polymer reagent Hg/Naflon-H upon 4-hydroxy-2-alkynones (III) also produced II (condition b). The sequence was successfully applied to the synthesis of bullatenone, a naturally occurring 3(2H)-furanone. Treatment of 1,1,1-triethoxy-2-alkyn-4-ols (IV) with trifluoroacetic acid and mercury(II) acetate gave 5-ethoxy-3(2H)-furanones (V) (condition c). In contrast, the alkynols IV were transformed into 4-alkoxy-2(5H)-furanones (VI) upon reaction with Hg/Naflon-H. Ketone-propiolic acid adduct VII was found to be the intermediate of this reaction. Actually, VII was efficiently converted to VI.



a: H_2SO_4-MeOH, b: Hg/Naflon-H, c: CF_3COOH, $Hg(OAc)_2$

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