INTRAMOLECULAR CYCLIZATION OF 3-(2-CARBOXYPHENYL)- AND 3-(2-CARBOXYBENZYL) ISOCOUMARINE

The studying of 3-substituted isocoumarins transformations under the electrophilic agents action showed the activity of isocoumarin fourth position to electrophilic substitution, but only in intramolecular reactions. Such processes are possible, for example, for 3-phenyl- and 3-benzylisocoumarin with the carboxyl group at the ortho position of the phenyl ring.

Under the action of various agents of acidic nature and heating 3-(2-carboxyphenyl)isocoumarin and 3-(2-carboxybenzyl)isocoumarin cyclized, respectively, to 5,11-dihydroindeno[1,2-c]isochromen-5,11-dione and 12-hydroxy-5H-dibenzo[c, g]chromen-5-one (in the last case the intramolecular acylation accompanied by a further aromatization of the resulting 6-membered ring). The best condensing agent for this reaction is concentrated sulfuric acid, and the cyclization occurs under the action of phosphorus trichloroxide, chlorosulfonic acid and concentrated nitric acid. Noted that there are no further sulfonation, sulphochlorination or nitration of the aromatic system at the cyclization conditions.

The resulting condensing structures inherent of α-chromones characteristic tendency to opening of the lactone ring in alkaline medium and the feedback cyclization by treatment with acids. Upon careful acidification of the alkaline solution of 5,11- dihydroindeno[1,2-c]isochromen-5,11-dione the product of opening the lactone ring – 2-(1,3-dioxo-2,3-dihydro-1H-2-indenyl)benzoic acid – can be isolated. But the isolation of the 12-hydroxy-5H-dibenzo[c,g]chromen-5-one lactone ring opening product was unable due to the presence of additional hydroxyl group: this reaction was carried out only for the methoxy derivative and 2-(3-hydroxy-1-methoxy-2-naphthyl)benzoic acid was obtained.

By phenolic hydroxyl of 12-hydroxy-5H-dibenzo[c,g]chromen -5-one reactions O-alkyl and O-acyl derivatives can be prepared.

Key words: intramolecular acylation, 5,11-dihydro-indeno[1,2-c]isochromen-5,11-dione, 5H-dibenzo[c, g]chromen-5-one.