PREPARATION AND REACTIONS OF 3-BENZOYL-3,4-DIHYDRO-4-QUINAZOLINECARBONITRILE (QUINAZOLINE REISSERT COMPOUND)

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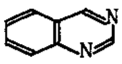
It has been reported that quinazoline (1) on attempted Reissert compound formation by a general method using benzoyl chloride and aqueous KCN undergoes ring opening, to give 2-benzamidobenzaldehyde, N-formylbenzamide, and o-aminobenzaldehyde.1) In the present work we report preparation and some reactions of hitherto unknown quinazoline Reissert compound (2).

Preparation of 2 was achieved the following route in over all yield 55%. Thus, 3,4-dihydro-4-quinazolinecarbonitrile (3), which was easily prepared by addition of HCN to 1, was subjected to benzoylation with benzoyl chloride in the presence of pyridine to give 2.

The alkaline hydrolysis of 2 in methanol resulted in the formation of 1 (62%) and benzoic acid (4, 41%). The acid hydrolysis in methanol gave α-benzamido-(2-aminophenyl)acetonitrile (5, 32%), 1 (trace), and methyl benzoate (6, 45%). The Reissert salt in aqueous HCl existed predominantly in a cyclic amidinium structure of type 7 as was proved by a combination of ^{13}CMR, ^{1}HMR, and IR spectrometric techniques. The anion 8, derived from 2 and NaH in dimethylformamide, underwent decomposition to give α-phenyl-4-quinazolinylmethyl benzoate (9a, 24%), 4-quinazolinecarbonitrile (10, 26%), and O-benzoylbenzoin (11, 28%).

The anion 8 reacted with aromatic aldehydes to give α-aryl-4-quinazolinylmethyl benzoates (9a - 9g) in good yields.



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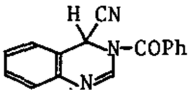

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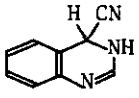

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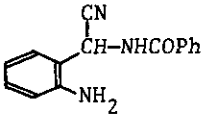

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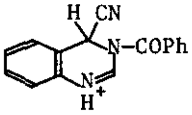

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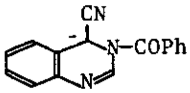

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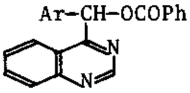
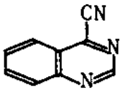


9a-g



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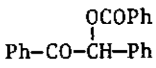

$\mathrm{Ph{-}CO{-}\overset{\displaystyle OCOPh}{CH}{-}Ph}$

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1) T. Higashino, et al., Abstracts of Annual Meeting of Pharm. Soc. Japan (1982), p. 476