THE SYNTHESIS OF QUINAZOLINONE ALKALOIDS THROUGH POTENTIAL IMINOKETENE INTERMEDIATE

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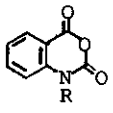
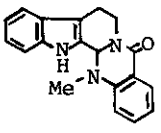
From the consideration of retro mass spectral synthesis of evodiamine (3), the sulfinamide anhydrides (1 and 2) were prepared from anthranilic acid or N-methyl-anthranilic acid with thionyl chloride. The reaction of 2 with 3,4-dihydro-β-carboline in dry benzene at room temperature afforded 3 in high yield. Rutecarpine (4), euxylophoricines A (5) and C (6) were synthesised by the similar treatment of sulfinamide anhydrides with 3,4-dihydro-β-carboline. Condensation of 1 with imino ethers gave deoxyvasicinone (7) and 8, an alkaloid from Mackinlaya species. Reaction of 1 with 3,4-dihydro-6,7-dimethoxyisoquinoline, followed by dehydrogenation, gave 5,6-dihydro-2,3-dimethoxy-8-oxoisoquinolo[1,2-b]quinazoline, the dehydro compound of which was also obtained by the reaction of 1 with papaverine or 6,7-dimethoxyisoquinoline.

Secondly, treatment of the sulfinamide anhydride (1 and 2) with primary and secondary amides yielded the corresponding quinazolinones, and this reaction was applied to total synthesis of quinazolinone alkaloids, 4, 5, glycorine (9), glomerine (10), homoglomerine (11), arborine (12), glycosminine (13) and crysogine (14).

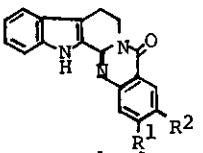
Finally, condensation of salicyl chloride (15) with 3,4-dihydro-β-carboline easily gave 6,7,8,13b-tetrahydro-5-oxo-5H-β-carbolino[1,2-b][1,3]benzoxazine, which was also synthesised from 15 with N-formyltryptamine. The same reaction of 15 with isoquinoline and 3,4-dihydro-6,7-dimethoxy-1-methylisoquinoline afforded the corresponding benzoxazinones, respectively.



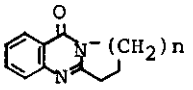
(1) R=H
(2) R=Me



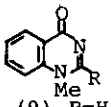
(3)



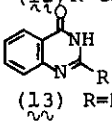
(4) $R^1=R^2=H$
(5) $R^1=R^2=OMe$
(6) $R^1+R^2=OCH_2O$



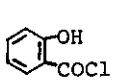
(7) n=1
(8) n=2



(9) R=H
(10) $R=CH_3$
(11) $R=CH_2CH_3$
(12) $R=CH_2C_6H_5$



(13) R=H
(14) $CH(OH)CH_3$



(15)