A NEW SYNTHESIS OF THE HETEROCYCLES RELATED TO IPECAC AND YOHIMBE ALKALOIDS

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Acylation of 1-methyl-3,4-dihydroisoquinoline (7) and harmalane (20) with various α,β-unsaturated acid chlorides such as methacryloyl , mesaconic acid, 3-methoxyacryloyl and cyclohexenecarbonyl chlorides afforded the corresponding enamides (8, 12, 14, 21, 25, and 30) in good yields respectively.

Irradiation of these enamides in methanol with a low pressure mercury lamp at room temperature brought about smooth photocyclisation to yield the photocyclised lactams of benzo[a]quinolizine type (9, 13, and 15), indolo[2,3-a]quinolizine type (21), and indolo[2,3-a]benzo[g]quinolizine type (26 and 31) in the yields ranging 30 -- 57 % respectively.

Since these photocyclised lactams were found to be rather unstable, further modifications converted them into the corresponding various compounds (10, 19, 24, 27, and 32) and established a usefulness of this type of photocyclisation as a synthetic tool for the preparation of the heterocyclic ring systems, benzo[a]-quinolizine, indolo[2,3-a]quinolizine, and indolo[2,3-a]benzo[g]quinolizine, related to Ipecac and Yohimbe alkaloids.