M1430A

REACTIONS OF HETEROCYCLIC COMPOUNDS WITH UNCOORDINATED AND COORDINATED ACETYLENE DERIVATIVES

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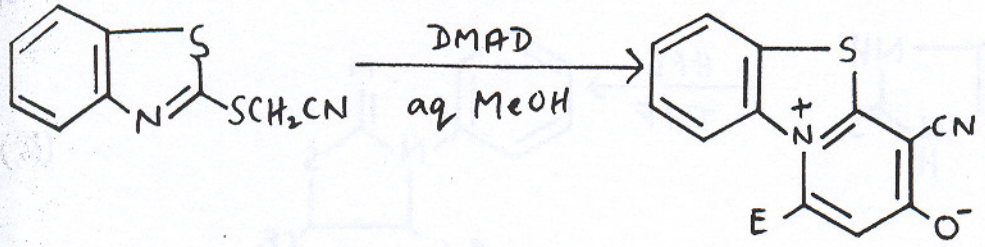
Reactions of heterocycles with reactive acetylenes have been widely used to prepare a variety of novel heteroaromatic compounds [1-3]; dimethyl acetylenedicarboxylate (DMAD) is commonly used but hexafluoro-but-2-yne (HFB) has received little attention.[4]

The aims of the present work have been twofold :

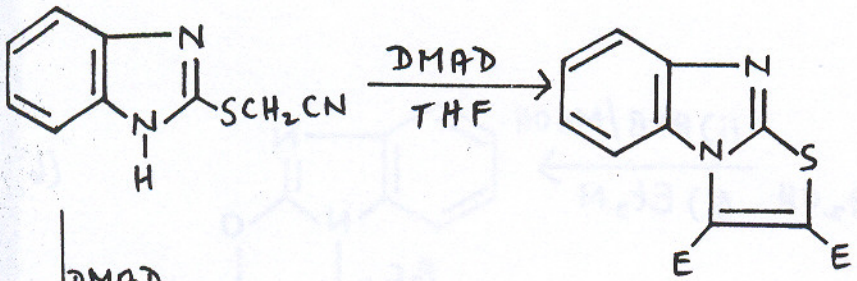
I. To synthesise tricyclic heteroaromatic compounds by the use of DMAD and HFB. Particular attention has been paid to the use of benzazole derivatives (reactions 1-6) and also to the preparation of tricyclic compounds in which the newly-formed ring contains sulfur or oxygen (reactions 2-6).

II. To compare the reactivity of heteroaromatic compounds with uncoordinated and coordinated DMAD and HFB. Reactions of benzimidazole-, pyridine-, and pyrazole derivatives with η^5-$C_5H_5Mo(HFB)_2Cl$ and related complexes will be described. Organometallic compounds containing heterocyclic ligands have been isolated and characterised. The structures and mechanisms of formation of new compounds will be discussed.

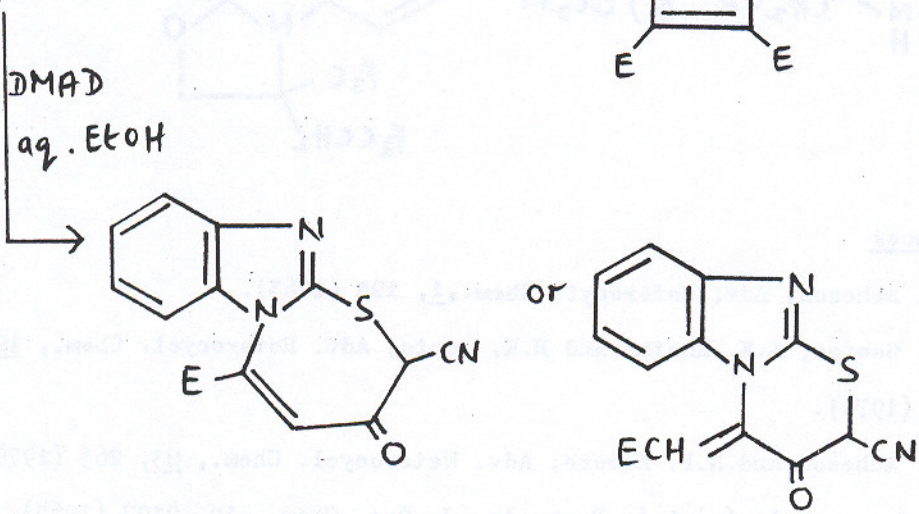
$E = CO_2Me$


DMAD
aq MeOH
SCH2CN
CN
E
O-

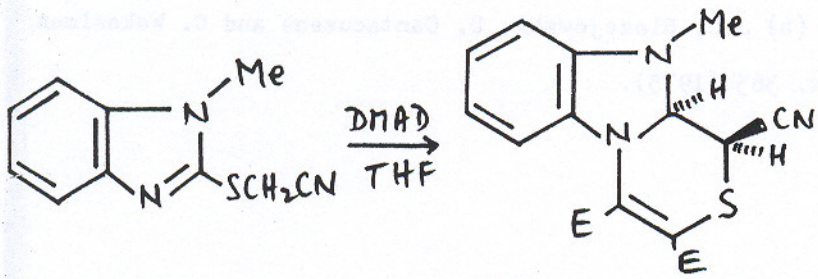
(1)


DMAD
THF
SCH2CN
E
E

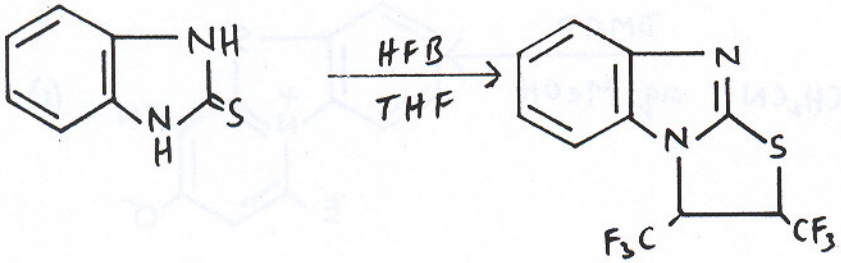
(2)


DMAD
aq. EtOH
CN
E
O
or
ECH
CN

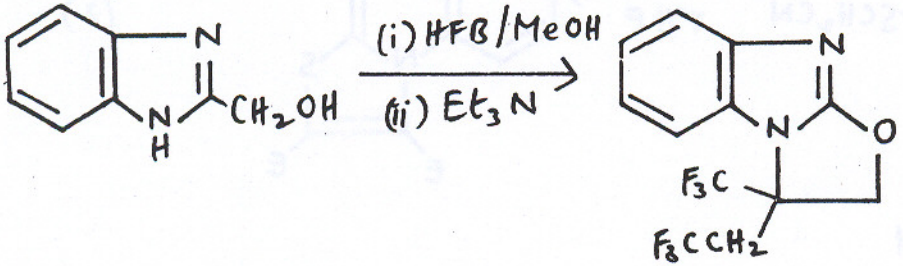
(3)


Me
DMAD
THF
SCH2CN
H
CN
H
E
E

(4)



(5)



(6)

References

1. R.M. Acheson, Adv. Heterocyl. Chem., 1, 125 (1963).
2. M.V. George, S.K. Khetan and R.K. Gupta, Adv. Heterocycl. Chem., 19, 279 (1976).
3. R.M. Acheson and N.F. Elmore, Adv. Heterocycl. Chem., 23, 263 (1978).
4. See for example (a) L.A. Paquette, J. Org. Chem., 30, 2107 (1965).
   (b) J.C. Blazejewski, D. Cantacuzene and C. Wakselman, Tetrahedron Lett. 363 (1975).