
Ahmed A. Fadda,* Hassan A. Etman, Mohamed Y. El-Seidy, Khaled M. Elattar

Department of Chemistry, Faculty of Science, Mansoura University, ET-35516 Mansoura, Egypt
afadda2@yahoo.com

In continuation of our studies on the chemistry of enamino and activated nitriles [1-4] and as a part of our program directed toward developing new approaches to a variety of heterocycles incorporating the antipyrine moiety [1, 2] of potential biological activity, we report here the scope and applicability of 2-[(1,5-dimethyl-3-oxo-2-phenyl-2,3-dihydro-1H-pyrazol-4-yl)-hydrazono]-malononitrile as a unique precursor for the synthesis of some enaminonitriles and their behavior towards different reagents in which a antipyrine ring is incorporated. The starting 2-[(1,5-dimethyl-3-oxo-2-phenyl-2,3-dihydro-1H-pyrazol-4-yl)-hydrazono]-malononitrile (2) was used as key intermediate for the synthesis of 3-amino-2-(1,5-dimethyl-3-oxo-2-phenyl-2,3-dihydro-1H-pyrazol-4-ylazo)-[3-substituted]-1-yl-acrylonitrile derivatives 3-10. In addition, nitrile derivative 2 reacted with hydrazine hydrate or malononitrile to afford the corresponding 3,5-diaminopyrazole 11 and enaminonitrile derivative 13, respectively. On the other hand, compound 3 was subjected to react with malononitrile, acetic anhydride, triethylorthoformate, DMF-DMA, thiourea and hydroxylamine hydrchloride to afford antipyrine derivatives 16-21. Moreover, the reaction of enaminonitrile 3 with carbon disulfide in pyridine afforded the pyrimidine derivative 22, whereas, in NaOH/DMF followed by addition of dimethyl sulphate afforded the methyl carbonodithioate 24. The reaction of enaminonitrile derivatives 3-5 with phenylisothiocyanate afforded the thiopyrimidine derivatives 25a-c. Finally, the enaminonitrile 4 reacted with 3-(4-chloro-phenyl)-1-phenyl-propenone to afford the pyridine derivative 27. The newly synthesized compounds were characterized by elemental analyses and spectral data (ir, $^{13}$C nmr, $^1$H nmr and ms).

REFERENCES