عنوان مقاله:

An efficient, four-component reaction for synthesis of dihydropyrimidin derivatives from malononitrile, arylglyoxal, arylamine and benzonitrile

محل انتشار:

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خلاصه مقاله:

Heterocycles are important, not only because of their abundance, but above all because of their chemical, biological and technical significance. Heterocycles count among their number many natural products, such as vitamins, hormones, antibiotics, alkaloids, as well as pharmaceuticals, herbicides, dyes, and other products of technical importance [1]. Classical methods for preparation of dihydropyrimidin derivtives via various intramolecular cyclization reactions of urea derivtives or amidine derivtives onto compounds such as 1,3-dicarbonyl, ketone, α,β-unsaturated and other have been described. The medicinal importance of dihydropyrimidin has been recognized for many decades and many compounds exhibit antiviral, antitumor, antibacterial, and anti-inflammatory properties [2]. Herein, we describe a simple fourcomponent reaction on the addition of malononitrile 1 and arylglyoxal 2 with aryl amines 3 and benzonitrile derivativs 4 in ethanol solvent leading to dihydropyrimidin derivatives 5 (Fig. 1). The mild reaction conditions, catalyst-free, short reaction time, and excellent yields are advantages of the protocol. All the synthesized compounds were unknown to the best of our knowledge and were characterized by 1H and 13C NMR, IR and melting points. For instance, the 1H NMR spectrum one of the compound derivatives 5 (6-amino-4-(4-methylbenzoyl)-2-phenyl- 1-(p-tolyl)-1,6-dihydropyrimidine-5-carbonitrile) consisted of two singlet at δ = 2.24 and 2.26 ppm for the methyl groups in the product. Carbon aliphatic proton's was observed as a singlet in δ = 4.92, the aromatic protons and NH2 protons resonated in the region δ = 7.10-7.64 ppm. The 13C NMR spectrum of compound 5a exhibited 20 distinct signals in agreement with the proposed structure. In the IR spectrum, the two carbonyl and nitrile group absorption were observed at 1707, 2245 cm–1. Partial assignments of these resonances for the other products are given in the experimental section.

کلمات کلیدی: