



MICROWAVE IRRADIATION ASSISTED ONE-POT SYNTHESIS OF 3, 4 DIHYDROPYRIMIDINONES UNDER SOLVENT-FREE CONDITION USING HOLMIUM CHLORIDE AS AC CATALYST

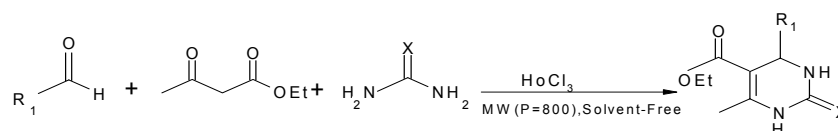
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Microwave reactions under solvent-free conditions and in the presence of a catalyst are attractive in offering reduced pollution and offer low cost together with simplicity in processing and handling [1]. During recent years, the use of lanthanide (III) compounds as catalysts or promoters in organic synthesis has attracted great interest from many chemists [2]. Dihydropyrimidinones (DHPMs) have attracted increasing interest due to their diverse therapeutic and pharmacological properties, such as antiviral, antibacterial, antihypertensive and antitumor effects. Therefore, their synthesis has been the focus of much interest for organic and medicinal chemists [3]. The original one-pot synthesis of 3,4-dihydropyrimidin-2(1H)-ones was first reported by Pietro Biginelli in 1893. However, this reaction suffers from the harsh conditions, high reaction times and frequently low yields [4]. Recently, Wang et al. reported an efficient Biginelli-type reaction for the synthesis of 3, 4 – dihydropyrimidinones by using PEG-SO₃H as catalyst under microwave irradiation [5]. In continuation of our interest in microwave-assisted synthesis, we would like to report the synthesis of various dihydropyrimidinones by one-pot condensation of aldehydes, ethyl acetoacetate and urea or thiourea in the presence of Holmium chloride hexahydrate as a catalyst under microwave irradiation and solvent free condition. The reactions were completed in 2-6.30 min with 87–96% yields [6].



Reference:

1. Katritzky, A. R.; Singh, S. K. *ARKIVOC* **2003**, xiii, 68-86.
2. Lu, J.; Bai, Y.; Wang, Z.; Yang, B.; Ma, H. *Tetrahedron Letters*. **2000**, 41, 9075–9078.
3. Maradur, S.P.; Gokavi, G.S. *Catalysis Communications*, **2007**, 8, 279–284.
4. Biginelli, P. *Gazz. Chim. Ital.* **1893**, 23, 360.
5. Salehi, H.; Guo, Q.-X. *Synth. Commun.* **2004**, 34, 171–179.
6. Salehi, H.; Guo, Q.-X. *Synth. Commun.* **2004**, 34, 4349 - 4357.