

Estu Prihandini Butar Butar, Maria, 2018, Modifikasi Reaksi Biginelli Untuk Sintesis Senyawa Turunan Dihidropirimidintion. Skripsi dibawah bimbingan Dr. Hery Suwito, M.Si. dan Dr. Alfinda Novi Kristanti, DEA., Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga.

ABSTRAK

Dihidropirimidin (DHPM) merupakan senyawa heterosiklik turunan pirimidin yang sangat menarik untuk disintesis dan dikembangkan karena memiliki beberapa aktivitas biologis, seperti: analgesik, antimalaria, antivirus, antiHIV, antikanker. Perkembangan sintesis turunan DHPM terus dilakukan untuk memperoleh metode sintesis yang efisien dan rendemen yang baik. Pada penelitian kali ini telah dilakukan sintesis senyawa turunan dihidropirimidin melalui reaksi Biginelli termodifikasi menggunakan dua macam metode, yaitu metode *microwave* dan refluks. Perbedaan sintesis senyawa turunan DHPM terletak pada reaktan aldehida yang digunakan yaitu 4-florobenzaldehida disimbolkan dengan MT-1 dan 2-tiofenkarboksaldehida disimbolkan dengan MT-2. Pada MT-1 dibagi menjadi dua bagian yaitu MT-1a menggunakan metode *microwave* dan MT-1b menggunakan metode refluks. Demikian juga dengan MT-2. Rendemen terbaik dihasilkan dari reaktan 2-tiofenkarboksaldehida dan 4-fluorobenzaldehida menggunakan metode refluks yaitu berturut-turut sebesar 69,78% (MT-2b) dan 51,67% (MT-1b). Sementara rendemen yang dihasilkan dari metode *microwave* dengan reaktan 2-tiofenkarboksaldehida dan 4-fluorobenzaldehida berturut-turut sebesar 10,35% (MT-2a) dan 25,69% (MT-1a). Karakterisasi molekul target dilakukan dengan menggunakan instrumen FT-IR, ^1H NMR, dan ^{13}C NMR. Metode sintesis menggunakan *microwave* memberikan rendemen yang kurang memuaskan tetapi metode ini memiliki kelebihan yaitu waktu reaksi yang cukup singkat, prinsip kerja yang lebih sederhana dan dilakukan tanpa pelarut.

Kata kunci: Dihidropirimidin, Reaksi Biginelli, Microwave-assisted Organic Synthesis, Refluks

Estu Prihandini Butar Butar, Maria, 2018, Modification of Biginelli Reaction for Synthesis of Dihydropyrimidinthiones. The script was under guidance of Dr. Hery Suwito, M.Si. and Dr. Alfinda Novi Kristanti, DEA., Department of Chemistry, Faculty of Science and Technology, Airlangga University.

ABSTRACT

Dihidropirimidine (DHPM) is a pyrimidine derived heterocyclic compound that is interesting to synthesize and develop because it has several biological activities, such as analgesic, antimalarial, antiviral, anti-HIV, and anticancer. The development of DHPM derivative synthesis is continuously going on to obtain an effective synthesis method and high yield result. In this research synthesis of dihydropyrimidine derivative compound was carried out through modified Biginelli reaction using two kinds of method, there were microwave and reflux. The synthesis of DHPM derivative compounds was done using different aldehyde which were 4-fluorobenzaldehyde (MT-1) and 2-thiophencarboxylamide (MT-2). Synthesis of MT-1 is divided into two parts: MT-1a using microwave and MT-1b using reflux method, as well as MT-2. The best yield was obtained from the 2-thiophencarboxaldehyde and 4-fluorobenzaldehyde reactants using reflux method which gave a yield respectively 69.78% and 51.67%. The yield of microwave method with 2-thiophencarboxylic acid and 4-fluorobenzaldehyde reactants were respectively 10.35% and 25.69%. Target molecule characterization was performed using FT-IR, ^1H NMR, and ^{13}C NMR instruments. Microwave synthesis method gave unsatisfactory yield but this method has some advantages such as relatively short reaction time, simple working principle and without solvent.

Keywords: *Dihydropyrimidine, Biginelli Reaction, Microwave-Assisted Organic Synthesis, Reflux*