

Zulianto, Lutfan, 2016, Reaksi Biginelli Untuk Sintesis Senyawa Turunan Pirimidin Menggunakan Katalis Asam *p*-Toluensulfonat (PTSA), FeCl₃/silikalit-1, dan CuSO₄/silikalit-1. Skripsi dibawah bimbingan Dr. Hery Suwito, M. Si., dan Dr. Abdulloh, M.Si., Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga.

ABSTRAK

Reaksi Biginelli merupakan suatu reaksi multikomponen *one-pot* (*one-pot multicomponent reactions*) untuk mensintesis cincin heterosiklis turunan pirimidin dari tiga prekursor sederhana, yakni senyawa 1,3-dikarbonil, urea, dan turunan aldehid dengan katalis asam. Untuk memperoleh rendemen yang banyak, reaksi Biginelli dimodifikasi dengan menambahkan katalis yang mempunyai sifat keasaman yang tinggi yakni dari asam Brønsted dan asam Lewis. Dalam penelitian ini dilakukan sintesis suatu turunan pirimidin yaitu etil 4- (2,4-dimetoksi-fenil)- 6-metil- 2-okso- 1,2,3,4-tetrahidropirimidin- 5-karboksilat dari 2,4-dimetoksi benzaldehid, urea, dan etil asetoasetat menggunakan asam Brønsted yaitu PTSA dan asam Lewis yaitu ion logam Fe³⁺, dan Cu²⁺, yang diimpregnasi pada *supporting agent* silikalit-1. Dari hasil penelitian ini diperoleh rendemen hasil sintesis dengan katalis asam PTSA sebesar 59,1% serta diperoleh juga intermediet reaksi. Untuk katalis asam Lewis FeCl₃/silikalit-1 dan CuSO₄/silikalit-1 masing masing didapatkan rendemen sebesar 30% dan 9%. Penentuan struktur senyawa hasil sintesis tersebut dilakukan dengan FTIR, ¹H-NMR, dan ¹³C-NMR.

Kata kunci: asam Brønsted, asam Lewis, pirimidin, reaksi Biginelli, *supporting agent* terimpregnasi.

Zulianto, Lutfan, 2016, Biginelli Reaction For Synthesis Pyrimidin Derivatif Compound Using *p*-Toluensulfonic Acid (PTSA), FeCl₃/silicalite-1, and CuSO₄/silicalite-1 As Catalyst. Final project under guidance Dr. Hery Suwito, M. Si., and Dr. Abdulloh, M.Si., Department of Chemistry, Faculty of Science and Technology, Universitas Airlangga.

ABSTRACT

Biginelli reaction is a one-pot multicomponent reaction for synthesis of heterocyclic ring of pyrimidine derivatives from three simple precursor, that are 1,3-dicarbonyle compound, urea, and aldehyde derivatives using acid as catalyst. In its development to enhance high product, its reaction condition was modified by using a catalyst possessing strong acidity of Brønsted acid or Lewis acid respectively. In this research, a pyrimidine derivative that was ethyl-4-(2,4-dimethoxyphenyl)-6-methyl-2-oxo-1,2,3,4-tetrahydropyrimidine-5-carboxy late was synthesized from 2,4-dimethoxybenzaldehyde, urea, and ethylacetoacetate using PTSA as Brønsted acid and metal ion Fe³⁺ and Cu²⁺ which was impregnated on supporting agent silicalite-1 as Lewis acid. The research yielded 59.1% product for the reaction using PTSA as catalyst, whereas reaction catalyzed with Lewis acid FeCl₃/silicalite-1 dan CuSO₄/silicalite-1 yielded 30% and 9% product respectively. The molecular structure of the reaction product was elucidated using FTIR, ¹H-NMR, and ¹³C-NMR.

Key word: Biginelli reaction, Brønsted acid, impregnated supporting agent, Lewis acid, pyrimidine.