OKSIDASI 3-(3,4-DIMETOKSIFENIL)-PROPANOL DENGAN MENGGUNAKAN OKSIDATOR PIRIDINIUM KLOROKROMAT (PCC)

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J2C 002 119

RINGKASAN

Eugenol merupakan komponen utama minyak cengkeh. Usaha pemanfaatan senyawa turunan eugenol mulai banyak dilakukan. Metileugenol merupakan salah satu senyawa turunan eugenol dan dapat dikonversi lagi menjadi senyawa 3-(3,4-dimetoksifenil)-propanol melalui reaksi hidroborasi dengan menggunakan H_3B:dietileter. Pada penelitian ini senyawa tersebut di oksidasi lebih lanjut dengan menggunakan oksidator Piridinium Klorokromat (PCC) menjadi senyawa 3-(3,4-dimetoksifenil)-propanal yang merupakan senyawa antara dalam sintesis antibiotik C-9154.

Oksidator Piridinium Klorokromat (PCC) disintesis dengan mereaksikan HCl dengan CrO_3 diikuti dengan penambahan piridin pada suhu reaksi 0 ^{0}C. Reaksi oksidasi senyawa 3-(3,4-dimetoksifenil)-propanol dengan oksidator PCC dilakukan dengan menggunakan pelarut diklorometan dan diaduk selama 3 jam pada suhu reaksi 30 ^{0}C dengan perbandingan mol 1:2. Hasil yang diperoleh diekstrak dengan dietileter dan dievaporasi, kemudian dikarakterisasi sifat fisiknya melalui penentuan indeks bias dan diidentifikasi strukturnya menggunakan FT-IR dan GC-MS.

Produk sintesis Piridinium Klorokromat (PCC) berupa padatan jingga, dengan rendemen 85 % dan titik leleh 160 ^{0}C-163 ^{0}C, sedangkan produk oksidasi berupa larutan berwarna coklat kehitaman dengan indeks bias 1,57 dan rendemen sebesar 71,3 %. Data spektrum FT-IR hasil oksidasi memperlihatkan serapan kuat gugus karbonil (C=O) pada bilangan gelombang 1724,2 cm^{-1} dan serapan oleh gugus C-H aldehid pada bilangan gelombang 2723,3 cm^{-1}, diperkuat dengan data GC-MS pada t_R = 20,797 menit terdapat ion molekuler dengan m/e = 194 dan puncak dasar dengan m/e = 151 yang menunjukkan struktur senyawa 3-(3,4-dimetoksifenil)-propanal.

SUMMARY

Eugenol is the major component of clove oil. Recently, the effort to develop eugenol derivative compounds has started to do. One of them is methyleugenol, it can be converted into 3-(3,4-dimetoxyphenyl)-propanol compound through hydroboration reaction using H_3B:diethylether. In this reaserch propanol yielded was oxidized using Pyridinium Clorochromate (PCC) as an oxidator to be 3-(3,4-dimetoxyphenyl)-propanal, which is used as intermediate in synthesis of antibiotic C-9154 derivative.

Oxidator of Pyridinium Clorochromate (PCC) was synthesized by reacting HCl and CrO_3, followed with addition of pyridine into solution at 0 ^{0}C temperature. The PCC product was used to oxidized 3-(3,4-dimetoxyphenyl)-propanol. Oxidation reaction of 3-(3,4-dimetoxyphenyl)-propanol with PCC as an oxidator was done using dichloromethane as solvent for 3 hours at 30 ^{0}C temperature in a mole ratio of 1:2. The product of oxidation was extracted by diethyl ether and evaporated, then physically characterized by measuring the refractive index and identified the structure by FT-IR and GC-MS.

The synthesis product of Pyridinium Clorochromate (PCC) was an orange solid with 79,1 % yield and melting point 160 ^{0}C-163 ^{0}C. Whereas, the oxidation product was a dark brown solution with refractive index 1,57 and 71,3 % yield. Data of FT-IR showed strong absorption of carbonyl (C=O) at wave number 1724,2 cm^{-1} and absorption of C-H aldehyde at 2723,3 cm^{-1}, strengthened by GC-MS data at t_R = 20,797 minutes that showed molecular ion at m/e = 194 and base peak at m/e = 151 which representing the structure of 3-(3,4-dimetoxyphenyl)-propanal.

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