INTISARI

Amina aromatis primer dari anilin bersifat toksik sehingga dilakukan modifikasi struktur anilin melalui benzoilasi anilin dengan benzoil klorida. Melalui modifikasi stuktur ini diharapkan dapat menurunkan sifat toksis dari anilin namun daya analgesiknya masih ada. Senyawa hasil benzoilasi anilin ini berupa benzoilanilida yang termasuk senyawa amida turunan benzoil.

Sintesis benzoilanilida ini berdasarkan metode Schotten-Baumann, yaitu benzoilasi amin aromatis primer (anilin) dengan benzoil klorida dalam pelarut natrium hidroksida berair. Natrium hidroksida ini berfungsi untuk menetralkan HCl yang dilepaskan. Namun NaOH merupakan suatu nukleofil kuat sehingga reaktif terhadap benzoil klorida. Dengan demikian rendemen senyawa hasil sintesis tidak optimal. Oleh karena itu, perlu dicari basa lain yang tidak reaktif terhadap benzoil kloida. Dalam penelitian ini digunakan piridin yang merupakan nukleofil lemah dan tidak bereaksi dengan benzoil klorida. Dengan demikian, selain untuk mempelajari reaksi substitusi nukleofilik asil, penelitian ini juga bertujuan untuk melihat dan membandingkan pengaruh penambahan basa NaOH dan piridin dalam sintesis senyawa benzoilanilida.

Penelitian ini termasuk eksperimental murni yang dilakukan dengan mereaksikan antara anilin dan benzoil klorida dalam tiga kondisi perlakuan yaitu dengan penambahan basa NaOH, basa piridin, dan tanpa penambahan basa (sebagai pembanding). Analisa hasil dilakukan secara kualitatif dengan uji organoleptis, uji pereaksi kimiawi, uji kelarutan, penentuan titik lebur, uji kromatografi lapis tipis (KLT), elusidasi struktur senyawa hasil sintsis dengan spektroskopi inframerah (IR), dan spektroskopi resonansi magnetik inti (NMR), serta analisis secara kuantitatif dengan perhitungan rendemen senyawa hasil sintesis.

Hasil penelitian menunjukkan bahwa ketiga senyawa hasil sintesis dari ketiga metode mempunyai bentuk, warna, bau, dan rasa yang sama serta tidak mengandung gugus amina aromatis primer sebagaimana anilin sebagai senyawa asal, karena bereaksi negatif dengan DAB HCL. Ketiga senyawa hasil sintesis larut dalam aseton dan kloroform, agak sukar larut dalam etanol, dan tidak larut dalam air, HCl, dan NaOH. Jarak lebur ketiga senyawa hasil sintesis yang dilakukan tanpa penambahan basa, dengan basa NaOH, dan dengan piridin mirip, masing-masing adalah 162,7-163,8^{0}C, 162,5-163,7^{0}C, dan 162,6-163,7^{0}C. Uji KLT menunjukkan ketiga senyawa hasil sintesis mempunyai bercak tunggal dengan harga Rf yang sama yaitu 0,86. Elusidasi Struktur ketiga senyawa hasil sintesis dengan spektroskopi IR dan NMR menunjukkan profil spektra yang diidentifikasi sebagai senyawa yang mempunyai struktur benzoilanilida. Berdasarkan hasil analisis diatas, dapat disimpulkan bahwa ketiga senyawa hasil sintesis adalah benzoilanilida. Dari hasil perhitungan rendemen, diketahui bahwa metode sintesis benzoilanilida tanpa penambahan basa menghasilkan rendemen sebesar 54,71%, dengan penambahan basa NaOH sebesar 56,95% dan dengan basa piridin sebesar 76,88%. Berdasarkan data ini dapat disimpulkan bahwa sintesis benzoilanilida dari reaksi antara anilin dengan benzoil klorida menggunakan basa piridin sebagai pengikat HCl yang terbentuk merupakan metode sintesis yang lebih baik dibandingkan dengan penambahan basa NaOH.

ABSTRACT

Primary aromatic amine of aniline is toxic so it's done modification of aniline structure by benzoilation of one with benzoil chloride. Base of this modification, it is hoped that can decrease toxic properties of aniline but it still has analgesic activity. The product of aniline benzoilation is a benzoilanilide which it is included class of benzoil derivative amide compound.

Synthesis of benzoilanilide based of Schotten-Baumann method, it was a benzoilation of primary aromatic amine of aniline with benzoil chloride in aquous sodium hydroxide. This base was purposed to neutralize HCl which it's released from the reaction. But this base was a strong nucleophile so it also could reacted with benzoil chloride and caused unoptimally rendement of synthetic product. Because of this case, it was necessary to find another base which it was not reactive toward benzoil chloride.In this research, it was used piridine which had weak nucleophilicity so it was hoped thar the reaction with benzoil chloride could be pressed minimally. However, beside to study nucleophilic acyl substitucy reaction, this research was purposed to know influence of NaOH and piridine addition in the synthesis of benzoilanilide.

This research was included a pure experiment which was done by reacted aniline with benzoil chloride under three treatment, each were with NaOH addition, piridine addition, and without a base addition (as a control). Result analysis was done qualitatively by organoleptic test, chemical reagent test, solubility test, melting point test, Thin Layer Chromatography (TLC) test, elucidation of the synthetic product with infrared (IR) and Nuclear Magnetic Resonance (NMR) spectroscopy then the last one was a quantitative analysis by rendement accounting of synthetic product.

Experimental result showed that all of three synthetic product from each method had same form, colour, smell, and taste and it did not contain primary aromatic amine group like aniline as a starting material, because it reacted negatively with DAB HCl. All of three compound were insoluble with water, HCl, and NaOH but it were soluble in most of organic solvent like ethanol, aceton, and chloroform. Melting distance of three synthetic product were similar each other, 162,5-163,7° C for treatment with NaOH, 162,6-162,7° C for treatment with piridine, and 162,7-162,8 for treatment without a base condition. Thin Layer Chromatography test showed that three of synthetic product had a single spot which had a similar Rf value about 0,86. Elucidaton of three synthetic product structure with IR and NMR spectroscopy showed spectrum feature that were identified as a compound which had benzoilanilide structure. Based of those data above, it could be concluded that all of three synthetic product were benzoilanilide. From the data of rendement accounting, it was cleared that the method of benzoilanilide synthesis with NaOH addition yielded rendement about 56,95%, with piridine yielded rendement about 76,88%, and without a base condition was about 54,71%. According of these data it could be concluded that synthesis of benzoilanilide from the reaction between aniline and benzoil chloride used piridine as HCl neutralizer which was released, was the best method in the synthesis of benzoilanilide than using of NaOH.