Percobaan Sintesis Sakarin Tersubsiitusi Basa Mannich 2.6-Dimetilmorfolin = Synthesis of Substituted Saccharin with 2,6-Dimethylmorpholine as Mannich Base

Mohammad Aditya Wardhana, author

Abstrak

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Sakarin banyak digunakan di berbagai industri. Selain digunakan pada industri sakarin juga diderivatisasi dan diuji aktivitas biologisnya, seperti antioksidan, antibakteri, antikanker, dan antiinflamasi. Basa Mannich diketahui dapat meningkatkan berbagai aktivitas biologis. Salah satu amin yang digunakan untuk mensintesis basa Mannich adalah 2,6-dimetilmorfolin yang menunjukkan profil farmakologis dengan spektrum luas. Derivatisasi sakarin dengan basa Mannich memiliki potensi tinggi untuk dikembangkan, selain itu derivatisasi sakarin belum banyak dilakukan sehingga perlu digali lebih lanjut. Eksperimen ini bertujuan untuk memperoleh derivat sakarin yang tersubstitusi basa mannich 2,6-dimetilmorfolin. Sintesis derivat sakarin dilakukan dengan menggunakan reaksi Mannich, dengan 2,6-dimetilmorfolin dan 4-metoksibenzaldehid. Hasil sintesis berupa cairan kental berwarna kuning cerah dengan rendemen crude 89,67 . Produk hasil sintesis lalu dimurnikan dengan menggunakan kromatografi lapis tipis preparatif dengan hasil rendemen 5,64 . Uji kemurnian dilakukan menggunakan kromatografi lapis tipis dan densitometri. Setelah itu strukturnya dielusidasi menggunakan spektrofotometri FTIR dan spektrofotometri 1H-NMR. Hasil interpretasi spektrofotometri FTIR menunjukkan adanya perubahan struktur dari senyawa pemula, namun interpretasi spektrum 1H-NMR berbeda dengan apa yang diprediksi. Berdasarkan data yang didapat, hasil sintesis sudah terbentuk namun kurang stabil dan diduga terurai kembali.
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ABSTRACT
Saccharin is widely used in many industries. Besides being used in the industry, saccharin also derivatized and being tested for its biological activity, such as antioxidant, antibacterial, anticancer, and antiinflammation. The Mannich base is known to enhance various biological activities. One of the amines used to synthesize a potent Mannich base is 2,6 dimethylmorpholine which exhibits a broad spectrum pharmacological profile. The derivatization of saccharine with Mannich base has high potential to be developed. Besides derivatization of saccharin has not been done so much and need to be explored further. This experiment aims to obtain a derivate of substituted saccharine with mannich 2,6 dimethyl morpholine. Synthesis of saccharin derivatives was performed using Mannich 39 s reaction, with 2,6 dimethylmorpholine and 4 methoxybenzaldehyde. The result of synthesis is bright yellow liquid with yield of crude 89,67 . The synthesis product was then purified by preparative thin layer chromatography with yield of 5.64 . The purity test was performed using thin layer chromatography and densitometry. After that the structure was elucidated using FTIR spectrophotometry and 1H NMR spectrophotometry. The results of the FTIR spectrophotometric interpretation indicate a structural change of the compound, but the interpretation of the 1H NMR spectrum is different from what was predicted. Based on the data obtained, the synthesis results are formed but less stable and allegedly decomposed again.