

PENGARUH EFEK INDUKSI DAN POSISI SUBSTITUEN TURUNAN ANILIN TERHADAP SINTESIS SENYAWA AMIDA

Denisa Milenia Agustina
18/424216/PA/18321

INTISARI

Penelitian pengaruh efek induksi dan posisi substituen turunan anilin terhadap sintesis senyawa amida ini mempunyai tujuan untuk mempelajari efek induksi pada turunan anilin terhadap sintesis produk amida serta mempelajari pengaruh posisi substituen pada turunan anilin terhadap sintesis produk amida. Sintesis dilakukan melalui reaksi asilasi anilin dan turunannya dengan bromoasetil bromida menggunakan trietilamina sebagai basa dalam pelarut diklorometana. Reaksi dijalankan pada suhu ruang dengan pengadukan semalaman. Reaksi dihentikan dengan larutan HCl 10%. Produk hasil reaksi kemudian dimurnikan menggunakan kromatografi kolom dan dikarakterisasi menggunakan spektroskopi inframerah (FTIR) serta kromatografi gas-spektrometri massa (GC-MS).

Hasil penelitian menunjukkan bahwa senyawa amida berhasil disintesis dalam bentuk padatan berwarna putih hingga putih kekuningan dengan rendemen yang bervariasi. Analisis FTIR memperlihatkan pita serapan khas gugus amida, yaitu regangan N-H dan C=O, sedangkan hasil GC-MS menunjukkan puncak ion molekul dan pola fragmentasi yang sesuai dengan struktur senyawa target. Perbedaan rendemen yang diperoleh menunjukkan bahwa efek induksi dan posisi substituen pada cincin aromatik anilin berpengaruh terhadap efisiensi reaksi asilasi. Turunan anilin dengan substituen pendonor elektron pada posisi para memberikan rendemen yang lebih tinggi dibandingkan posisi meta dan orto, yang dipengaruhi oleh hambatan sterik.

Kata Kunci: asilasi anilin, efek induksi, posisi substituen, senyawa amida.



***IMPACT OF INDUCTIVE EFFECTS AND SUBSTITUENT POSITION OF
ANILINE DERIVATIVES ON THE SYNTHESIS OF AMIDE COMPOUNDS***

Denisa Milenia Agustina
18/424216/PA/18321

ABSTRACT

This research was conducted to examine the impact of inductive effects and the position of substituents in aniline derivatives on the synthesis of amide compounds. The synthesis was performed via acylation of aniline and its derivatives with bromoacetyl bromide, employing triethylamine as a base in dichloromethane as the reaction solvent. The reaction was performed at room temperature under continuous stirring overnight and was quenched with a 10% HCl solution. The resulting products were purified using column chromatography and subsequently characterized by Fourier Transform Infrared (FTIR) spectroscopy and Gas Chromatography–Mass Spectrometry (GC–MS).

The experimental results demonstrated that the target amide compounds were successfully obtained as white to pale yellow solid materials with varying yields. FTIR spectra exhibited characteristic absorption bands corresponding to the amide functional group, particularly N–H and C=O stretching vibrations, while GC–MS analysis revealed molecular ion peaks and fragmentation patterns consistent with the proposed chemical structures. The variation in product yields indicates that both inductive effects and substituent positions on the aromatic ring of aniline significantly impact the efficiency of the acylation reaction. Aniline derivatives bearing electron-donating substituents at the para position produced higher yields compared to those substituted at the meta and ortho positions, a trend that can be attributed to steric hindrance and electronic effects.

Keywords: amide compounds, aniline acylation, inductive effect, substituent position.