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Abstract
27 March 2012

Comparing Environmental Impacts in Synthesis of a Local Anesthetic: Lidocaine

The final product of our synthesis was lidocaine. Lidocaine is used in medicine as a local anesthetic. The first step was completed by reducing a nitro group on a benzene ring to aniline using tin chloride. Next, the NH_2 on the aniline was reacted with the reagent chloroacetyl chloride to form α-chloro-2,6-dimethylacetanilide. In order to display that the original synthesis was more green, the reagent was switched to bromoacetyl bromide resulting in α-bromo-2,6-dimethylacetanilide. The products α-chloro-2,6-dimethylacetanilide and α-bromo-2,6-dimethylacetanilide were treated with diethyl amine to form crude lidocaine via an S_N2 reaction. A solvent change from diethyl ether to methyl t-butyl ether was also tested in this final step. IRs and NMRs were obtained to ensure that the syntheses were carried out correctly and all expected products were obtained.