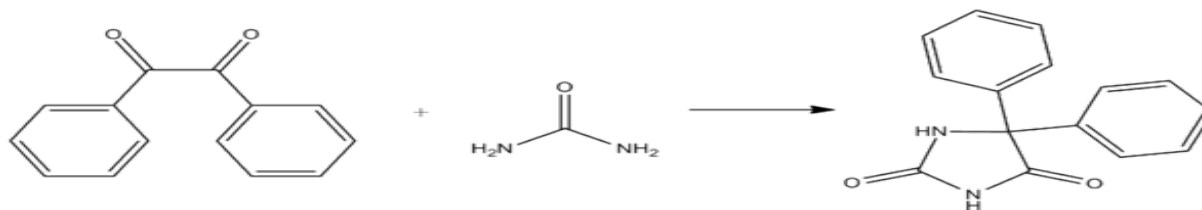


A Benzilic acid Rearrangement: Making Phenytoin

Background

Dilantin is a brand name drug on the market that is an anti-epileptic drug with the generic name phenytoin. By using common chemicals in an organic chemistry lab, phenytoin can be produced with ease. The reaction is between the two phenyl groups on benzil joining at a carbon that is bonded with urea ending in a 5 member ring due to a benzilic acid rearrangement.

Experimental

Weigh out 0.5 g benzil and 0.25 g urea. Place contents in a 25 mL round bottom flask. Measure 7.5 mL of ethanol and 3 mL of 30% aq sodium hydroxide. Pour liquids in round bottom flask and add a boiling chip. Gently swirl the mixture and it is okay if there is still a large portion of the solid settling to the bottom. Attach a water cooled reflux condenser and boil gently for 1 hr. Throughout the hour, there will be a wide change of colors that occur so do not worry if the solution turns black or purple.

After boiling for 1 hr, allow mixture to cool to room temperature and then add 12.5 mL of water. Then filter the solution to remove any side product solid particulates that are sparingly soluble. Use 6 M hydrochloric acid to acidify the filtrate and then collect the product by suction filtration, wash thoroughly with water. Recrystallize all of the product with ethanol.