Synthesis of Aspirin and the Importance of the Strength of the Acid Catalyst

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Aspirin is a widely used pain killer to relieve minor aches and pains, and the drug's main component, acetylsalicylic acid, can be synthesized somewhat easily in a high school or college chemistry lab. It was first discovered in willow bark in 1763, and in 1897, Felix Hoffmann isolated it while working with the company, Bayer (Vernier Software and Technologies). The reaction of producing aspirin is combining salicylic acid with acetic anhydride to produce acetylsalicylic acid (pure aspirin), and acetic acid as a byproduct. In most college and high school labs, either phosphoric or sulfuric acid are used as the catalyst in the synthesis of aspirin, and both can give pure results. But because phosphoric acid is weak, and sulfuric is strong, this research is questioning what affect the strength of an acid catalyst has on the purity of the aspirin sample or the percent yield. In this research project, different acids; strong and weak, will be tested to determine if the strength of an acid does have an overall affect on the synthesized substance. Different methods will be used to test the purity of the samples such as spectrophotometer testing and melting point testing.