

CHEMISTRY

Lab 7b: AN ANALYSIS OF ASPIRIN TABLETS (with back-titration)

INTRODUCTION

The aim of this experiment is to determine the percentage of 2-ethanoyl-hydrobenzoic acid (acetylsalicylic acid) in aspirin tablets. A known amount of standard sodium hydroxide solution is used in excess to hydrolyse a known mass of aspirin tablets:



The unused sodium hydroxide which remains is then titrated with standard acid. The amount of alkali required for the hydrolysis can now be calculated and from the above equation, the amount of moles of acetylsalicylic acid which has been hydrolyzed can be found.

PROCEDURE

CARE: Gloves and eye protection must be worn.

1. Prepare a 100 cm³ solution of 0.10 mol dm⁻³ HCl by diluting an appropriate amount of a 1.0 mol dm⁻³ HCl solution.
2. Weigh accurately an aspirin tablet. Put it in a beaker and pipette exactly 25 cm³ of a 1.0 mol dm⁻³ NaOH solution onto the tablet, followed by about the same amount of deionized water. Simmer the mixture gently for ten minutes to hydrolyse the acetylsalicylic acid.
3. Now cool the mixture and transfer with washings to a 100 cm³ volumetric flask and make up to the mark with deionized water.
4. Pipette 25 cm³ of the hydrolyzed solution into a conical flask. Titrate this against the 0.10 mol dm⁻³ HCl solution using phenolphthalein as an indicator. Record the results of at least three titrations. (Make a rough titration first)
5. Calculate the moles and mass of acetylsalicylic acid in an aspirin tablet. What is the mass percentage of acid in a tablet?