Chem 101 Laboratory Exercise #6 Laboratory Notebook

Extraction of caffeine from Tea

Using Microsoft Word, students are to write their in-lab notes below while *completing the Laboratory exercise. The Laboratory notebook must be uploaded to the CHEM 101 lab Brightspace site as a readable .pdf by the end of the lab period. Please see page 7 of the 202309 CHEM 101 lab manual as to all the information required in the in-lab notes. The documentation below must reflect the student's own work without assistance from others.*

Name: Arfaz Hossain **Lab Section:** B12 **Quad:** 2 **Date:** November 30, 2023

In-lab Notes:

Procedure

First, I opened a tea bag and weighed the contents on a balance. Next, I transferred the tea into a 125 mL Erlenmeyer flask and added 50 mL of distilled water, bringing it to a boil on a hot plate. In a separate 100 ml beaker, I dissolved approximately 5 g of NaCl in 20 ml of distilled water. After decanting the hot tea solution, I added 10 g of NaCl and 0.1 g of Ca(OH)2 to it, swirling the mixture until dissolved. Using vacuum filtration with a Buchner funnel and Celite, I separated the solid residue. The filtrate was then warmed, and I added 8 ml of isopropanol, stirring for a minute. After layer separation, I collected the top isopropanol/caffeine layer twice, and subsequently added an equal volume of ethanol. After allowing for crystallization, I vacuum-filtered the caffeine crystals, air-dried them briefly, and recorded the weight.

Tea Bag Contents Weighed Amount: 2.79g
Caffeine Extracted: 0.787g

Reference:

Isopropyl 111 Colonnada Road, Ottowa, ON K2E 7L6 LOT 204656
Tea Bag Uniliver Canada, Toronto, Ontario, M4W 3R2
Sodium Hydroxide $Ca(OH)_2$ FW 74.09