

Extraction and Isolation of Caffeine

Data Table

Extraction

a. Mass of 4 tea bags (step 1) _____ g
 b. Mass of tea bag-tea (step 2) _____ g
 Mass of tea (a – 4b) _____ g
 Mass of beaker + boiling stones _____ g
 Mass of beaker + crude caffeine _____ g

Crystallization

Mass of filter paper + caffeine crystals _____ g
 Mass of filter paper _____ g
 Mass of caffeine crystals _____ g

Sublimation

Mass of beaker _____ g
 Mass of beaker + caffeine _____ g
 Mass of sublimed caffeine _____ g

Thin-Layer Chromatography (TLC)

| | Distance Traveled (mm) | Solvent Travel (mm) | R_f Value |
|--------------------------|------------------------|---------------------|-------------|
| Caffeine Standard | | | |
| Caffeine Extract | | | |

Post-Lab Questions and Calculations

- Tea typically contains 3% caffeine by weight. What percent of the caffeine was obtained by extraction and purification?
- Based on the TLC results, was the purification process selective in isolating caffeine from the crude extract?