

Objective:

To use Thin Layer Chromatography (TLC) to determine the probable identity of the major active ingredients in commercial analgesic preparations

Experimental Procedure:

- You will be working with two other students to complete this lab.
- Obtain an analgesic tablet, 3 normal phase TLC sheets, a spotting capillary
- Each student in the group selects different analgesic tablets.
- Grind tablet with 4 mL of reagent grade methanol
- Then gravity filter the suspension through a folded 11cm piece of filter paper in a short stem funnel.
- Prepare TLC sheet for spotting
- Apply 5 spots to each TLC plate (you will use the same spotting capillary throughout this experiment)
- Solutions of 6 standards are available for use
- Use templated on procedure sheet to mark your TLC plates before spotting
- Spots designated S1-S6 are the 6 standards. Spot A is your analgesic tablet; Sports B & C are the extracts of the tablets of the other two people in your group. (Each student uses a different solvent)
- The 3 solvents are hexanes, ethyl acetate, and 75% ethyl acetate-25% hexane.
- Pour enough developing solvent into TLC jar (~5 to 6 mm of liquid from bottom of jar)
- Place cap on top of the jar and seal it. Let solvent rise until its about 7 to 15 mm from the top of the sheet
- Remove the TLC sheet and mark the solvent right away.
- After drying, view the TLC under the UV lamp & circle the spots.
- Calculate the R_f value of each spot
- Compare results with the group and determine which solvent give the best separation of the standards
- Each student then uses the 3rd TLC plate with the best solvent to compare your sample with the standards that appear to be in your sample.
- Make sure you record R_f values for the standards and the components of your analgesic sample in each solvent system

Reagents:

- Methanol
- Aspirin
- Ibuprofen
- Acetaminophen
- Ketoprofen
- Naproxen sodium
- Caffeine
- Hexane
- Ethyl Acetate
- 75% ethyl acetate-25% hexane

Apparatus:

- Spotting capillary
- Normal phase TLC sheets
- Mortar & Pestle
- TLC jar
- TLC plate
- Gravity Filter
- 11 cm piece of filter paper
- Short stem funnel

Safety:

- Dispose of chemicals, TLC spotting capillaries, and contaminated paper in correct containers

- The silica gel on the TLC plates can damage eyes
- Never look directly into the ultraviolet lamp
- DON'T rinse or wash the TLC jar after disposing of the solvents
- ALL of the analgesics are considered toxic