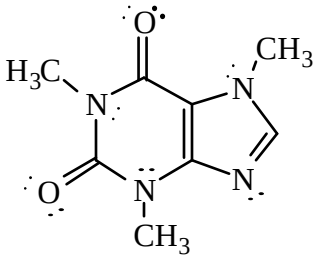
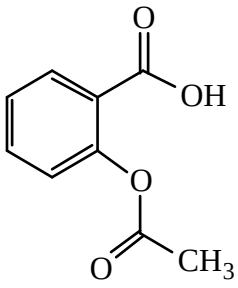
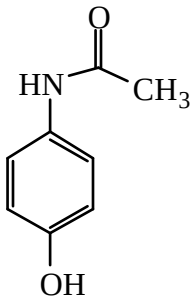
THIN LAYER CHROMATOGRAPHY OF ANALGESICS



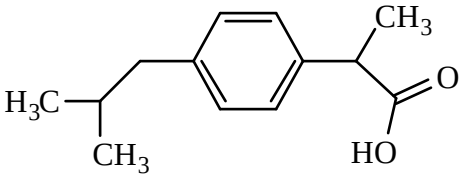
caffeine



aspirin



acetaminophen



ibuprofen

Experimental Procedure

1. Obtain 2 thin layer plates. On each plate, draw a line with a pencil on the narrow side, approximately 1 cm from the bottom edge.

2. On the first plate, spot the following (you may have to spot the Ibuprofen several times):
a. acetaminophen, b. aspirin, c. caffeine, d. Ibuprofen e. Your unknown

3. On the second plate, spot the following:
a. Anacin, b. Advil c. Excedrin, d. Tylenol, e. Bayer

4. Prepare the chromatography chamber using a Mason jar and filter paper liner (this should be touching the inside wall of the jar). Add the developing solvent to a depth less than 0.5 cm measured from the center of the jar. The solvent should be below the line on your TLC plate where you spotted your compounds.

5. Saturate the filter paper in the jar with the developing solvent.

6. Before developing your plates in the solvent, make sure that you check the plates to confirm that you have enough material to see under the UV lamp. Just place your plates under the UV lamp and look to see a dark purple spot for each of the materials you have spotted on the line.

7. Hinge the two plates on the backside (plastic side) by using a strip of tape. Using long tweezers, place the 2 plates into the jar and spread out the bottom of the plates immediately.

8. Cap the jar and allow the plates to develop. Do not move the jar to another location after the plates have been placed in the jar (this can make the solvent splash around).

9. After the solvent front has reached about 1 cm from the top, take off the cap and remove the plates from the jar. With your pencil, **immediately** mark the position of the solvent front on both plates. The solvent evaporates quickly!!

10. Allow the plates to dry and then observe the plates under the short wavelength ultraviolet light. Circle the spots with your pencil.

10. Measure the distance traveled by each spot and by the solvent front. Calculate the R_f values for each spot. You may have up to 3 spots in some of the analgesics; you should calculate the R_f values for **each** of the spots

11. From the R_f values, identify which compounds are in Anacin, Bayer, Excedrin, Advil, and Tylenol. Some will have only one compound in them and some will have up to three compounds.

12. Your unknown will be one of the 5 commercial analgesics we have tested. Determine which of the 5 analgesics (from # 11) is your unknown.