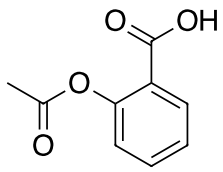
TLC of Analgesics

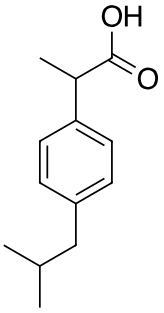
TUD Department of Chemistry

Read pages 162-172 in Making the Connections for a discussion of the principles of thin-layer chromatography (TLC).

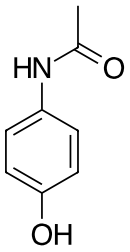
Commonly available over-the-counter analgesics often contain aspirin (acetyl salicylic acid), ibuprofen, acetominophen, caffeine or some combination of thereof. In this experiment, we will determine the Rf values of the pure compounds using TLC. We will then identify unknown analgesics based on their content as determined by TLC.



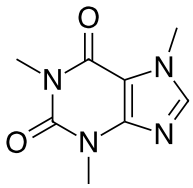
Acetyl Salicylic Acid



Ibuprofen



Acetominophen



Caffeine

Obtain pure samples of each of the analgesics (and caffeine) noted above. Dissolve 5-10 mg of each in 1-2 mL of methanol. Using 2.5 x 7.5 cm silica-gel G plates containing fluorescent indicator, spot 1-5 μL of each compound. You should be able to fit two spots on each plate. Develop with ethyl acetate containing 1% acetic acid. View the plates in the UV cabinet using both long and short wavelength UV, noting any differences with the two wavelengths. Lightly mark the spots with a pencil while under the light. Determine the Rf for each compound.

Obtain a couple of unknown powders and dissolve 5-10 mg in 1-2 mL methanol. Repeat the procedure as above. By comparison of the unknown Rf values with the known values you should be able to identify what compounds are present in the unknowns.

While waiting on plates to develop in this experiment, recrystallize and characterize the aspirin that you synthesized in the last experiment.