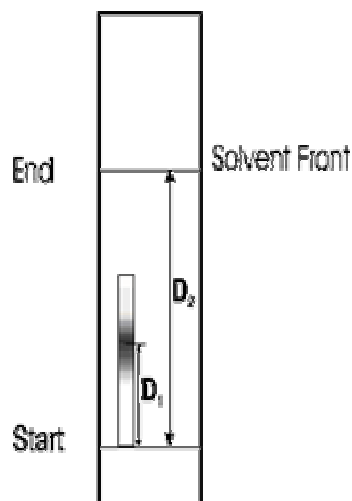


What is the Retention Factor, R_f ?

The retention factor, R_f , is a quantitative indication of how far a particular compound travels in a particular solvent. The R_f value is a good indicator of whether an unknown compound and a known compound are similar, if not identical. If the R_f value for the unknown compound is close or the same as the R_f value for the known compound then the two compounds are most likely similar or identical.

The retention factor, R_f , is defined as

R_f = distance the solute (D_1) moves divided by the distance traveled by the solvent front (D_2)



$$R_f = D_1 / D_2$$

where

D_1 = distance that color traveled, measured from center of the band of color to the point where the food color was applied

D_2 = total distance that solvent traveled

Data Analysis: Identify as many individual bands and create a table with the following

1. Solvent distance (start line to score line)
2. Color of each specific band
3. Distance to each band (from start line)
4. R_f value for each.
5. Relative R_f for each (This is found by establishing one known band and dividing the R_f values of every other band by the R_f of the selected band). You will have to agree, as a class, as to which band is predominant in each plate.

Questions:

1. What is the main advantage of TLC over other separation techniques? Are there any disadvantages to the technique?
2. What would you expect to find if you used the leaf from a tree instead of spinach in this experiment?
3. Is the acetone/hexane solution used in the TLC development polar or nonpolar?
4. What would result in resolving abilities of each band if you increased the hexane? The acetone?