Chromatography Procedure

Part I M&M candies

1. Select the M&M colors to be tested. Using a disposable pipet, place a small drop of distilled water on top of the candy and let it sit for about 10 minutes. This will give a drop of fairly concentrated dye solution.

2. For the paper chromatography, prepare a developing chamber using a 1-L beaker. Add enough 0.1% NaCl, (solvent or eluting solution) so that the bottom of the beaker is covered by a 1⁄2 inch. Tightly seal the beaker with aluminum foil. It is important that the air above the mobile phase become saturated with solvent vapors.

3. Cut a strip from Whatman #1 filter paper as shown by the instructor. Along one side, 1 inch from the edge, draw a straight pencil line, and make marks at about 1 cm intervals.

4. Dip a round toothpick in water and use it to gently stir the drop on top of one of the M&M prepared in step 1 (held in one hand). Care must be taken not to dissolve away so much of the shell that the chocolate is exposed. Apply the extract to a spot on the pencil line on the paper. Air dry the spot by blowing gently over the paper. Reapply more extract to the same position at least 4 times until the color is clearly visible, but the spot is not too large. Label under the spot with code representing the color M&M used. Repeat the application using a clean toothpick with each different color of M&M. Spot the standard dye solutions in a similar fashion.

5. Carefully stand the paper in the developing chamber eluting solution, with the sample spots near the liquid surface, but not in the liquid (Figure 2). Tightly seal the beaker with the parafilm and let it stand undisturbed. The solvent will gradually rise by capillary action, carrying the components in the spots along.

6. Take the paper from the beaker when the solvent front is about 2 cm from the top and **immediately** mark the solvent front and let the paper dry. Note the position of the most intense part of the separated colors and carefully circle it.

7. Measure the distance from the straight line on which you applied the spots to the solvent front. Then measure the distance from the pencil line to the center of each colored spot and calculate the Rf value from the two number you obtained. Repeat the procedure for each colored candy spot that you applied.

Part II Felt tip pens

9. Use filter paper for the red, blue, green and black overhead marking pens. One plate holding all four evenly spaced spots is sufficient.

10. The spots must be very small and not too concentrated to get a good separation. To do this, take a round toothpick and dip it in distilled water. Touch the moistened end to the tip of the marking pen. Dip the toothpick in distilled water again, touch to the marking pen tip and immediately spot on the line of the filter strip just once. Repeat for each color.

11. Place in the developing chamber and seal with Parafilm. Allow the solvent front to move close to the top of the plate.

12. There are no standards to compare against. Identify the number of dyes, colors and relative positions. In particular, note which dyes in each color pen move the same distance.