Results and discussion example

Results In this experiment we used paper chromatography to determine the amount of chlorophyll a, chlorophyll b, xanthophyll, and beta-carotene in a tube of blended leaf extract. We recorded our findings on the table labeled. Shows the transmittance at each wavelength on a table from 400 to 720. The information on Figure 1 came from the leaf extract on the paper chromatography that we used; with the help of acetone, we saw the spectrum and the differences of the different pigments. Percentage transmittance, that the lower the number, the denser that solution is at that specific wavelength. As the numbers get higher, the less dense it is and if the number is 100 at a specific wavelength then the solution was clear. Each of the pigments had different low transmittance based on how high the absorption was in each of the pigments. For this, we calculated that there was a peak on the graph at the lowest points.

For instance, in the chlorophyll a column in Table 1 the lowest points on the graphs at 8 and 28 and also at 44, which shows that there will be a peak around those points. In chlorophyll b, the lowest points are from 25. 2, 12. 4, and 9. 4, which would be the first peak and the next will be at 55. 6. In Xanthophyll, the points were the first peak will be are 52. 4, 43. 6, 44. 8, and 53. 0. Lastly in Carotene, the graph will peak at 92. 2, 93. 6, and 92. 4. By using these points we predicted the behavior of the graph. The graph labeled Figure 1, shows the absorbance of each of the pigments that are shown. Figure 1 is that where table 1 shows the transmittance points of each wavelength of each pigment, Figure 1 shows the absorption peaks of each of the wavelengths. For chlorophyll a, the highest peaks are at 420, but then the graph plummets at around 450 and has another peak between 650 and

700. For chlorophyll b, the highest peaks of absorbance are between 450 and 500 then it makes a big plummet around 500 and has another peak between 640 and 660.

For Xanthophyll, the only peak is between 420 and 480, then the graph as minimal movement from there and stays in the 90 range never hitting 100. Lastly, beta-carotene has small peaks at 440 and 460 and then the graph stays almost stagnant at 100. Discussion The purpose of this experiment was to find out why the leaves on a tree changed color in the fall. We predicted that the molecules in the leaves of the tree attributed to the change. We found out that the molecules: Chlorophyll a, Chlorophyll b, Xanthophyll, and Beta-carotene are the main molecules that reside in a leaf. We also stated that the tree absorbs the elements found in some of these molecules so that they can be used in the spring when the trees are green once more. This prediction came from when we studied the molecular composition of each of the molecules and correlated the results of the experiment and the specific elements that the tree would have needed for another year. The results of this experiment show that there is less chlorophyll a and chlorophyll b in the composition of the leaves that were used.

This meant that when the season is changing, the molecules in these structures start to be absorbed back into the tree. This conclusion came from the fact that in table 1 from 420 and 440. Nanometers there was a low transmittance rate of these two molecules, which means that the absorbance rate was high. During the fall season there is not enough sunlight for the trees to perform photosynthesis to make their ownfood, what a plant needs to survive would be the Magnesium and Nitrogen that are found in the

molecular structures of chlorophyll a and b. Therefore they absorb all of these nutrients that the tree needs to survive so that they can make it through the winter. Errors could have been made with this experiment. Some of them include that the individuals in different groups did not have the same control as the others. We did not measure the same amount of acetone in each vial nor did we measure how much of the leaf extraction each person used. Another source of error would be how the spectrometer was used if it was reset the same at each wavelength each time.

Compared to previous experiments the information that was collected in this one was accurate. The peaks for each pigment were roughly around the same wavelength. The standard for chlorophyll a peaked at 430 and 662, chlorophyll b peaks at 453 and 642, xanthophyll a range from 450 to 550 and for the beta-carotene peaks at a range from 450 to 550. Our results were roughly around the same as you can see from Table 1. The end result of the experiment was successful, because of the results that we produced were similar to the results of previous experiments.