Title: effects of light on photosynthesis

Environment, Water

Title: Effects of Light on Photosynthesis Introduction: Photosynthesis is the complex process by which carbon dioxide and water are used to make carbohydrates by using light energy in green plants. The objective of this experiment is to measure the rate of photosynthesis Hypothesis: The petri dish that is exposed to the most light and with the NaHCO3 solution will have the best results and the petri dish that is kept in the dark will have the poorest results. Material and Methods: 1. Get 4 deep petri dishes and label them 1, 2, 3, and 4. Fill dish 1 about 2/3 full with distilled water. Fill the other 3 about 2/3 full with 0. 2% NaHCO3 solution. Set these aside for later. 2. Pour about 100 ml of 0. 2% NaHCO3 solution into a flask with a side arm. 3. Get three or four spinach leaves and cut 40-50 disks with a cork borer. Do not include the large veins in the disks that you make. Stack the leaves so you can cut through them all and cut 3 or 4 disks at once. Use a glass rod or a straw to push the disks out of the cork borer into the flask containing NaHCO3 solution. 4. Take the disks in the flask to your instructor, who will use a vacuum pump to draw the air out of the disks. As the flask is evacuated, you will see the water bubble and you may see bubbles coming out of the edges of the disks. Evacuate for about 30 seconds, then stop to see if the disks sink to the bottom of the flask. If they do not sink, continue to apply the vacuum. It is not necessary to sink all of the disks. The tissue will be damaged if it is over-aspirated. 5. Take the flask of disks back to your bench and pour its contents into a large dish. Discard any disks that are still floating (in the wastebasket, not the sink). With forceps, gently transfer 10-15 disks to each of the 4 Petri dishes. Spread the disks apart so that they are not resting on each other and replace their lids. Label them with your name

and place as follows: 1 - on the plant stand as close as possible to the bright light (bright light - low CO2) 2 - next to 1 on the plant stand (bright light - high CO2) 3 - on your lab table under normal room light (low light - high CO2) 4 - inside a cabinet or drawer in complete darkness (no light - high CO2) Results: The petri dishes placed in the bright light both had 100% of the disks floating. The petri dish placed in the low light and no light both had no disks floating at the end of the 45 minutes. Conditions | Number of disks floating | Number of disks in dish | % of disks floating | 1. Bright light - low CO2 | 10 | 10 | 100% | 2. Bright light - high CO2 | 10 | 10 | 100% | 3. Low light - high CO2 | 0 | 10 | 0% | 4. No light - high CO2 | 0 | 10 | 0% | Discussion: Conclusion: My hypothesis was not supported by my experimental results. Literature Cited: