Lilia Sanchez

Laboratory 2- Molecular Activity and Membrane Transport

August 19, 2023

PURPOSE: 2-C: MEASURMENT OF DIFFUSION THROUGH AGAR

PROCEDURE:

1. WE HAD A PETRI DISH THAT WAS FILLED WITH AGAR. THERE WERE 2 HOLES MADE WITHIN THE AGAR. INTO ONE HOLE, WE PLACED 2 DROPS OF METHYLENE BLUE. INTO THE OTHER HOLE, WE PLACED TWO DROPS OF POTASSIUM PERMANGANATE. WE RECORDED THE TIME AND IMMEDIATE DIAMETER OF EACH SPOT. THIS WAS OUR TIME ZERO MEASUREMENT.

2. NEXT WE MEASURED THE DIAMETER OF EACH SPOT IN MILLIMETERS ONCE EVERY MINUTE FOR 15 MINUTES. WE THEN CALCULATED/SUMMARIZED THE AVERAGES FROM THE DATA COLLECTED BY ALL GROUPS DOING THIS EXERCISE.

3. WE THEN CONSTRUCTED A GRAPH OF AVERAGE DIFFUSION DIAMETER VERSUS TIME FOR BOTH CHEMICALS.

4. FINALLY, WE DETERMINED THE DIFFUSION RATE OF EACH CHEMICAL. METHYLENE BLUE VS POTASSIUM PERMANGANATE. THE RESULTS ARE RECORDED ON THE BELOW GRAPH.

5. WE LOOKED UP THE MOLECULAR FORMULA AND STRUCTURE OF METHYLENE BLUE AND POTASSIUM PERMANGANATE IN **MERCK INDEX. (INFORMATION NOTED BELOW GRAPH)**

6. LASTLY, WE INTERPRETED OUR RESULTS WITH RESPECT TO THE INFORMATION OBTAINED FROM **MERCK INDEX.**

RESULTS:

IN REVIEWING DATA COLLECTED BY ALL OTHER GROUPS DOING THIS EXERCISE IT CAN BE STATED THAT THE AVERAGE CHANGE IN DIAMETER FOR THE POTASSIUM PERMANGANATE IS <1.12 MM AND FOR THE METHYLENE BLUE IT WAS <.873 MM.

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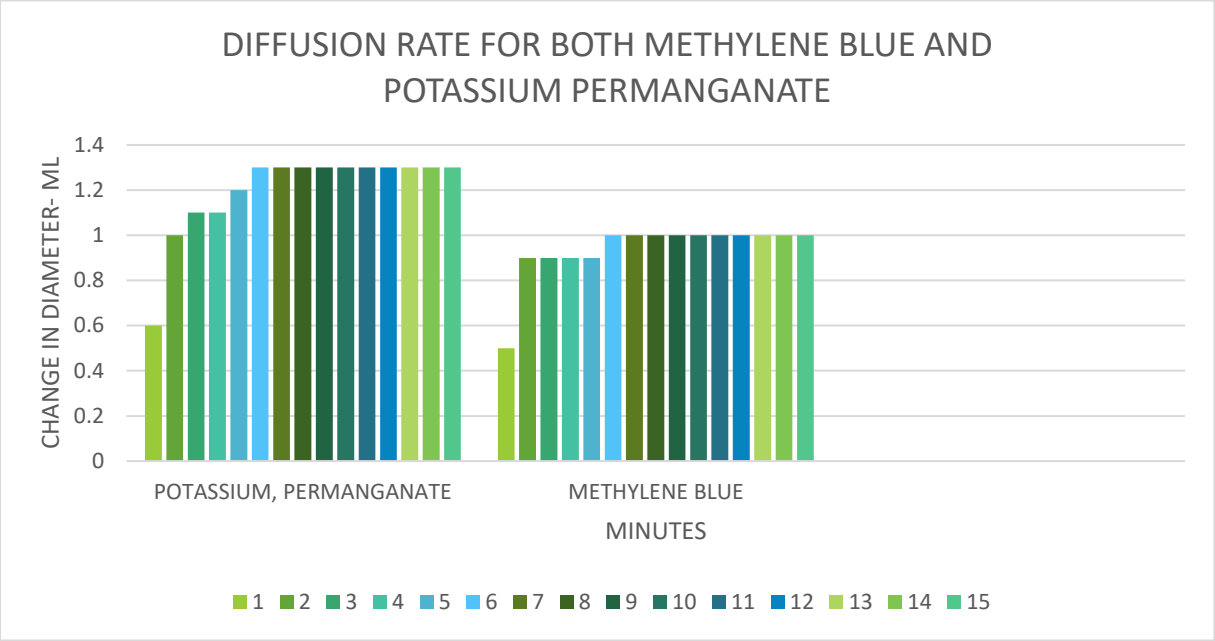
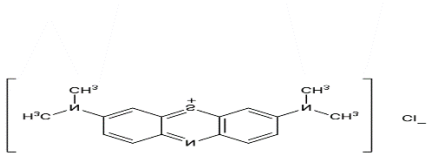


- ***METHYLENE BLUE***

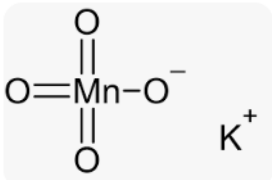
STRUCTURE:



MOLECULAR FORMULA: $C_{16}H_{18}ClN_3S$

- ***POTASSIUM PERMANGANATE***

STRUCTURE:



CHEMICAL FORMULA: $KMnO_4$

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DISCUSSION:

IN REVIEW OF THE DATA THAT WAS NOTED WITH THE EXPERIMENT, WE SEE THAT THE MOST SIGNIFCANT AMOUNT OF DIFFUSION TOOK PLACE AT THE BEGINNING OF THE PROCESS (WITHIN THE FIRST 5 MIN). THEREAFTER IT SEEMED TO HAVE HIT A SNAG. THE AMOUNT OF DIFFUSION SEEMED TO TEETHER OFF. WE CHECKED WITH OTHER GROUPS AND SEEMED TO HAVE SIMILAR RESULTS. WAS THERE AN ERROR? DOES THE RATE OF DIFFUSION DECREASE DUE TO THE CHEMICAL STRUCTURE OF THE SOLUTION? WHAT SHOULD HAVE THE BEEN THE CHANGE IN DIAMETER? I DON'T BELIEVE THE RESULTS ARE ACCURATE.

CONCLUSION:

THE PURPOSE OF THIS EXPERIMENT WAS TO MEASURE THE LEVEL OF DIFFUSION THROUGH AGAR. AS INSTRUCTED, THE EXPERIMENT WAS COMPLETED WITH THE FOLLOWING FINDINGS:

- DIFFUSION CAN VARY WITH EACH EXPERIMENT AND TYPES OF SOLUTES/SOLUTIONS USED.
- THE TIME FOR DIFFUSION, CAN VARY AS WELL DEPENDING ON THE SOLUTE/SOLUTION.
- THE DIFFUSION RATE IS ACTIVELY RAPID IN THE FIRST 5 MINUTES OF THE 15 MINUTE TIMED PROCESS WITH BOTH SOLVENTS.
- POTASSIUM PERMANGANATE WAS MUCH MORE PERMIABLE THAN THE METHYLENE BLUE.