ALTERNATE LABORATORY 8

Purpose:

The lab aims to figure out how a hormone called arginine vasopressin (AVP) helps our bodies hold onto water. We want to understand how AVP works at the tiny cell level and how it helps us maintain the right balance of water in our bodies. This helps us see how this hormone is essential for our bodies to work properly.

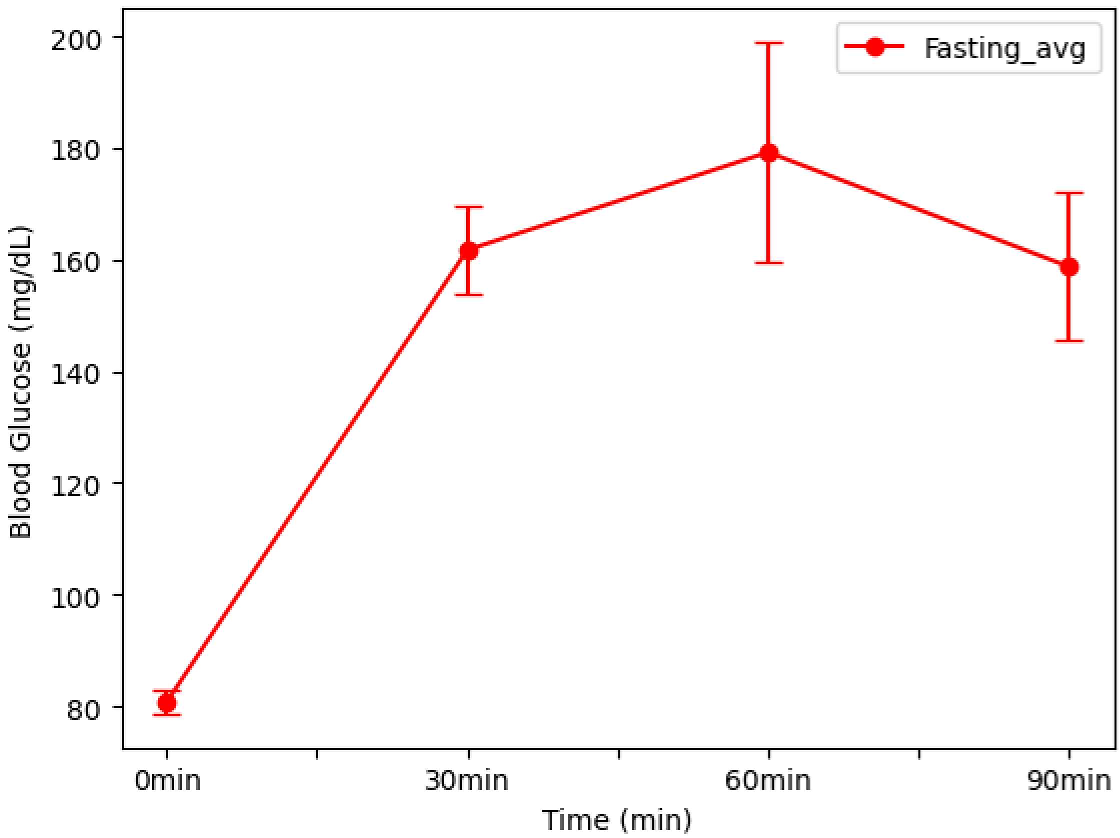
Procedures:

1. Obtain four people of similar size and weight. One person will already be dehydrated to 80% of normal body weight prior to lab.
2. Separate the people into four separate areas labeled "A", "B", "C", and "D".
3. Fill each container with 1-2 cm of distilled water. Note the time.
4. Every 15 minutes, for a period of 90 minutes, perform the following:
    a. Remove each person and
    b. Record the weight of each toad in tabular form.
    c. Replace the toads in their water-filled containers.
    d. Determine the percentage of initial weight gained by each toad.

Example: weight at 15 min - initial weight x 100% = % body weight gain Initial weight

Results:

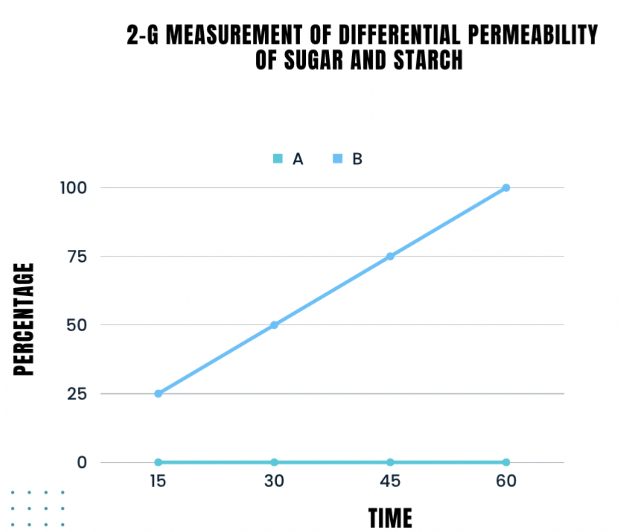
1_Fasting	2_Fasting	3_Fasting	4_Fasting	5_Fasting	6_Fasting	7_Fasting	Fasting_avg	Fasting_sem	
Group									
0min	75	77	85	86	103	81	83	80.75	2.101587
30min	140	159	158	190	141	131	161	161.75	7.845988
60min	154	135	174	254	171	152	180	179.25	19.773419
90min	151	141	133	210	170	185	191	158.75	13.210295



Discussion: The lab showed AVP helps kidneys absorb more water, confirming what we already knew. When AVP attaches to specific receptors, it triggers cAMP production, which is like a signal for cells. This specificity highlights how AVP controls this process accurately.

Conclusion: This lab reinforces how AVP is vital in balancing water by starting a chain reaction that tells cells to absorb more water. Understanding this process is crucial for our body to work normally.

2-G Measurement of differential permeability of sugar and starch



Discussion: In conclusion, the series of experiments delved into fundamental biological processes, yielding valuable insights. The investigation of diffusion through liquids unveiled the temperature's impact on diffusion rates, with a constructed graph illustrating the relationship. Diffusion through agar highlighted the role of molecular properties in varying diffusion rates. The filtration experiment underscored how solution thickness affects filtration dynamics. Osmosis experiments provided a comprehensive view of water movement across membranes, emphasizing osmotic equilibrium. Differential permeability insights elucidated membrane selectivity. Lastly, the tonicity experiment demonstrated cellular responses to different solutions. Collectively, these experiments contribute significantly to understanding diffusion, osmosis, filtration, and cellular behaviors under varying conditions, spanning implications across scientific, medical, and engineering domains.

Conclusion: In conclusion, the experiments delved into diffusion, osmosis, filtration, and tonicity. These investigations shed light on temperature's effect on diffusion, filtration dynamics, water movement in osmosis, and the impact of tonicity on red blood cells. Collectively, they provide valuable insights into fundamental biological processes and their underlying principles.