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Lab 8- Hormonal Activity- The Glucose Tolerance Test
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Purpose

The purpose of this laboratory experiment was performing a glucose tolerance test to see the ability of the pancreas in regard to responding to an excess ingestion of glucose. The glucose tolerance test is a valuable tool for diagnosing diabetes mellitus and evaluating the body's ability to respond to elevated glucose levels. It helps differentiate between normal glucose metabolism and abnormal responses, particularly in individuals with diabetes. By doing this lab activity, we were able to learn how to perform the test, and what the results indicate.

Procedure

8-A: Glucose tolerance test

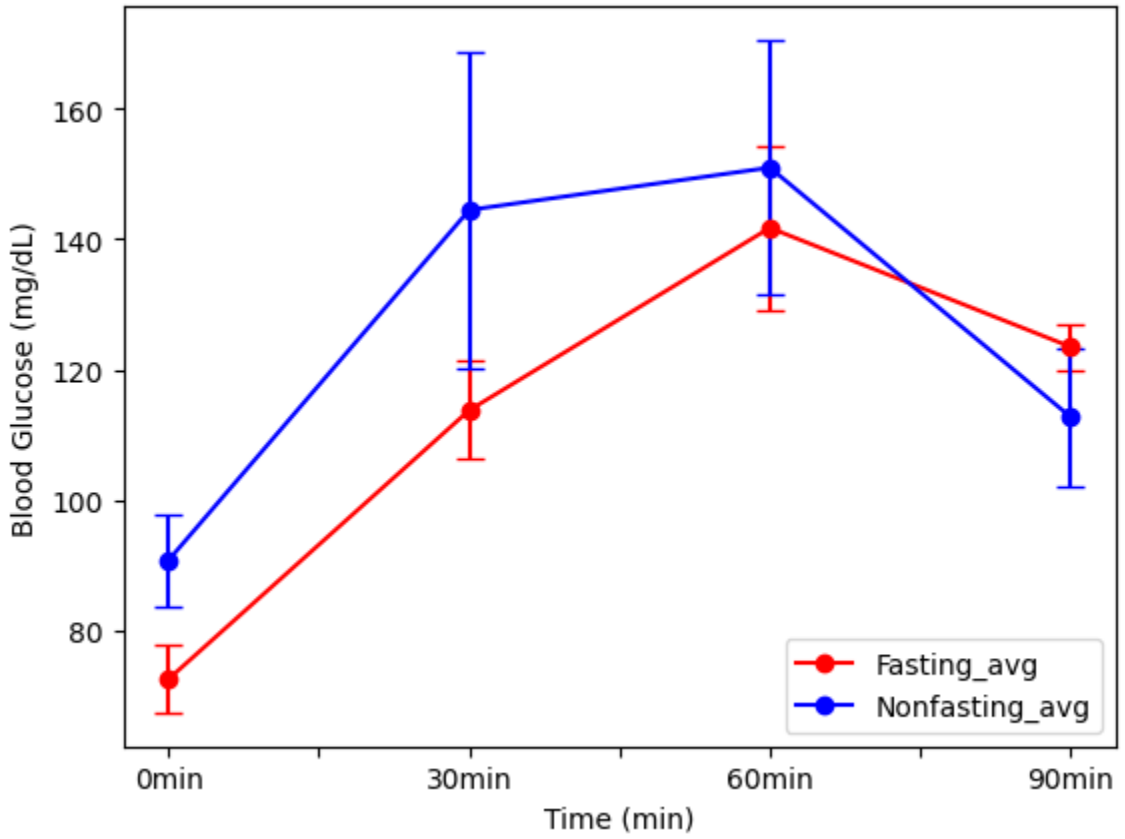
1. Six student volunteers will be selected for this experiment. These subjects should report to the lab in the fasted state – not having eaten for 10-12 hours.
2. Each student's normal fasting blood glucose level will be determined using the test strips for the glucometer assigned to each student. Each volunteer will clean a finger with 70% alcohol, then use a sterile lancet to obtain a drop of blood for the test. **If a student is helping another obtain a blood sample, gloves and universal precautions will be followed.
3. Each subject will then drink a lemon-flavored solution (Tru-Glu) of 25% glucose. The quantity of solution will be based on 1 g of glucose per kilogram of body weight. To determine body weight in kilograms, the weight in pounds will be divided by 2.2.
4. After ingesting the glucose, the subject will repeat the blood testing procedures every 30 minutes. Testing will continue in this manner for 1 1/2 hours or until the end of the lab period.
5. Record and graph the average of the class results of the blood glucose tests.
6. Compare the results with the normal glucose tolerance test curve. Describe the graphs in terms of absorptive and postabsorptive states.

Results

Group	1 Fasting	2 Fasting	3 Fasting	4 Fasting	5 Nonfasting	6 Nonfasting
0min	**72**	**59**	**75**	**84**	**86**	**101**
30min	**95**	**113**	**132**	**115**	**203**	**159**
60min	**115**	**136**	**176**	**140**	**208**	**122**

90min	**118**	**118**	**133**	**125**	**82**	**119**

Group	7 Nonfasting	8 Nonfasting	**Fasting avg**	**Fasting sem**	**Nonfasting avg**	**Nonfasting sem**
0min	**103**	**73**	72.5	5.17204	90.75	7.028217
30min	**127**	**89**	113.75	7.564996	144.5	24.18505
60min	**129**	**145**	141.75	12.66475	151	19.60017
90min	**119**	**131**	123.5	3.570714	112.75	10.63309



Discussion

I was one of the participants on this test and it was a fun activity. I've never been pregnant, so it was my first time trying the drink, but in my opinion, I didn't think it was that nasty. It tasted like and liquid Mexican popsicle to me. It was interesting seeing how the drink changed my blood sugar as time went by.

Conclusion

- Understand the basic mechanism of hormonal activity and the second messenger theory of some hormones.
- Understand absorptive and post-absorptive states.
- Understand the role of insulin and glucagon in the regulation of blood glucose.
- Understand the differences between IDDM and NIDDM.
- Understand the terms hyperglycemia and hypoglycemia.
- Understand the terms glucosuria, polyuria, and polydipsia.
- Understand the term acidotic.
- Understand what causes insulin shock.