Laboratory 8 - Hormonal Activity: The Glucose Tolerance Test
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Purpose

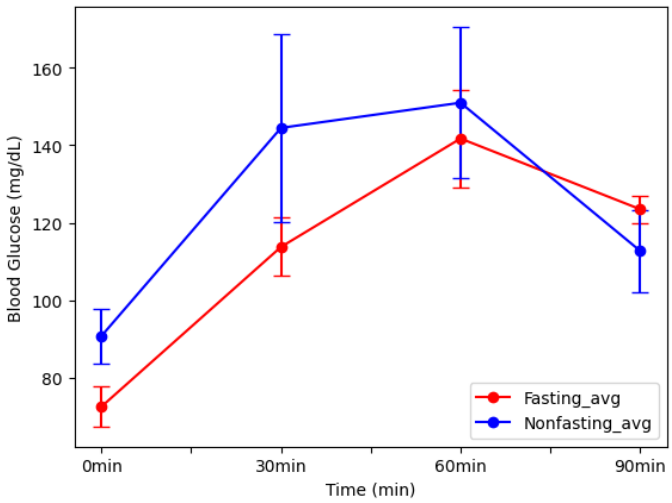
The primary function of insulin is to assist the transport of glucose across the cellular membrane, when insulin is deficient or lacking, only a small amount of glucose can cross the cell membrane and be used in cellular metabolism. The changes in blood glucose level following glucose ingestion are marked differently between the normal and the diabetic person. In a normal person, the blood glucose level rises from about 90 mg% to around 140 mg% in 1 hour and then falls back to normal within 3 hours or even below normal due to excess insulin released by the pancreas. The diabetic person shows a hyperglycemic response in which the blood glucose levels rises from about 120-160 mg% to as high as 300 mg% and then slowly falls to the fasting diabetic level after 5-6 hours. The purpose of laboratory 8 is to perform the glucose tolerance test on several individuals to visualize and compare the ability of the body to respond to an excess ingestion of glucose on different individuals.

Procedures

For the procedure, we performed the glucose tolerance test for 8 students, 4 of them who were fasting and 4 of them who were non-fasting. We did this by first determining each student's normal fasting blood glucose level by cleaning a finger with 70% alcohol, then using a sterile lancet to obtain a drop of blood for the test. Each student then drank a lemon flavored solution of 25% glucose. The quantity of solution will be based on 1g of glucose per kilogram of body weight. To determine body weight in kilograms, the weight in pounds will be divided by 2.2. After ingesting the glucose, each student repeated the blood testing procedure every 30 minutes for 1 hour and a half and recorded their results.

Results

Group	Fasting 1	Fasting 2	Fasting 3	Fasting 4	Non Fasting 5	Non fasting 6	Non fasting 7	Non fasting 8
0min	**72**	**59**	**75**	**84**	**86**	**101**	**103**	**73**
30min	**95**	**113**	**132**	**115**	**203**	**159**	**127**	**89**
60min	**115**	**136**	**176**	**140**	**208**	**122**	**129**	**145**
90min	**118**	**118**	**133**	**125**	**82**	**119**	**119**	**131**



Discussion

I really liked this lab and I think it has been one of my favorites so far because it was very easy to understand. In this laboratory we saw how by drinking the lemon flavored solution drink each student's blood glucose increased drastically. However as minutes went by the student glucose levels started going back down. This demonstrates how the pancreas respond to an excess ingestion of glucose. From the results, it seems like the solution had more of an effect on the students who were fasting than the students who were not fasting. After 90 minutes only one of the students' glucose levels went back to their normal fasting blood glucose level. An experimental error that could have resulted in accurate results could have been that one of the glucose monitors could have not been working properly and could have been giving inaccurate results, a solution to this could be that everyone uses the same glucose monitor to obtain more accurate results.

Conclusion

In conclusion, after drinking a solution filled with 25% glucose, it is proven that your normal blood glucose level will increase. What differs for everyone is how many hours after it takes for your glucose level to return back to normal. In a normal person, their glucose level is usually back to normal within 3 hours or even below normal due to excess insulin released by the pancreas. In a diabetic person their glucose level starts slowly reaching back to their normal diabetic level after about 6 hours. The diabetics abnormal response is because of the pancreas inability to secrete additional insulin in response to elevated blood glucose level.