

Laboratory 8- Hormonal Activity- The Glucose Tolerance Test

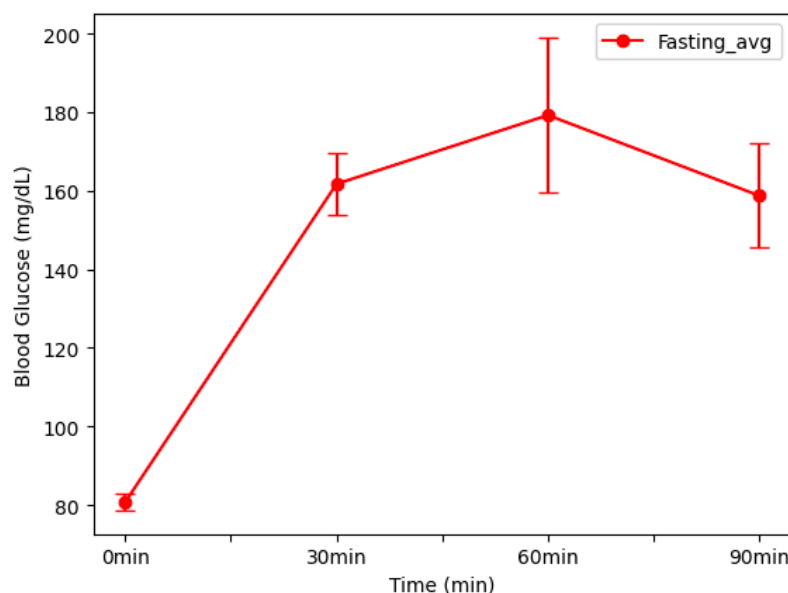
Purpose: The purpose of this lab is to teach us how our body can process large amounts of sugar. It will also help us better understand the important role of insulin in our body. We will also be learning the difference between hyperglycemia and hypoglycemia. Finally, we will also have a better understanding of what diabetes is and how it affects our body.

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 post-absorptive states

8-B: Insulin shock (information only)

An excess blood level of insulin causes a state of extreme nervousness and convulsions that is referred to as insulin shock. Insulin shock is caused by a low level of blood glucose (hypoglycemia), produced when insulin stimulates the entry of glucose into the body cells. The brain cells depend almost totally upon glucose for their energy, and when the blood glucose falls to a low level (50-70 mg%), the neurons become hyperexcitable and extreme nervousness develops. If the blood glucose level is lowered still further (30-50 mg%), clonic (spastic, irregular) convulsions may develop and eventually coma and death may result.

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	2.10158
30min	140	159	158	190	141	131	161	161.75	7.84598
60min	154	135	174	254	171	152	180	179.25	19.7734
90min	151	141	133	210	170	185	191	158.75	13.2102

Discussion:

We can see in the table above, that as the time progressed and the level of sugar intake increased so did the glucose levels in the blood. We can notice in person 4 that, the glucose levels increased significantly, this can happen if the previous night before fasting we ate high levels of sugar, carbs, etc... According to [cdc.gov](https://www.cdc.gov/diabetes/data/statistics/2014-statistics.html) after 2 hrs of having the glucose tolerance test the normal blood sugar is 140mg/dL or lower.

Conclusion:

In conclusion, the glucose tolerance test is used to help us better understand if our body is processing glucose correctly. People with insulin resistance, find it challenging to loose weight. Insulin resistance occurs when our body doesn't respond well to insulin (hence the name), this causes the pancreas to create more insulin, so that it can help glucose enter the cells. Hyperglycemia is caused when blood sugar levels are too elevated, and can become diabetes if it is not treated. Hypoglycemia is when blood sugars are too low. People with hypoglycemia will sometimes feel shaky, nervous, confused, and have fast heartbeats. Diabetes, is a very serious disease, that occurs when the pancreas does not produce enough insulin. It is very important to get checked if we are feeling any pre diabetes symptoms. Early detection is key, and taking care of our body and what we eat is very important.