AIM: Effect of rat insulin and streptozocin on blood sugar level.

This study investigates the effects of rat insulin and streptozotocin on blood sugar levels. While insulin is expected to lower glucose levels, streptozotocin—a compound that selectively destroys insulin-producing beta cells—is anticipated to induce hyperglycemia. The aim is to evaluate how each agent alters blood glucose and their potential interplay in diabetic models.

EQUIPMENT REQUIRED

Animal:	Rat
Drugs:	Insulin, Streptozocin
Instrument:	Glucometer

PRINCIPLE

The principle of this study is based on the opposing effects of insulin and streptozotocin on blood glucose levels. Insulin promotes glucose uptake by cells, thereby lowering blood sugar. In contrast, streptozotocin selectively damages pancreatic beta cells, reducing insulin secretion and causing an increase in blood glucose. By administering these agents, the study aims to observe their individual and combined impacts on glucose regulation.

PROCEDURE:

1) By using tail snip withdrawal method, take blood out of rat.
2) Then check glucose level of the blood using glucometer, ideally the value of normal blood glucose is 82 mg/dl.
3) Then, by using intraperitoneal route inject insulin to the rat, and further withdraw blood from rat and measure blood glucose level, ideally the value comes out to be 72 mg/dl.
4) Further, inject streptozocin by using intraperitoneal route wait for four days to show its effect.
5) Then withdraw blood from rat and measure blood glucose level, preferably the value comes out to be 115 mg/dl.

6) Then take new rat, by using tail snip withdrawal method, take blood out of rat, then check glucose level of the blood using glucometer, preferably the value of normal blood glucose is 80 mg/dl.
7) Further, inject streptozocin by using intraperitoneal route wait for four days to show its effect and then introduce insulin to rat by intraperitoneal route.
8) Then withdraw blood from rat and measure blood glucose level, preferably the value comes out to be 92 mg/dl.

CONCLUSION:

The study concludes that insulin effectively lowers blood glucose levels, while streptozotocin induces hyperglycemia by damaging pancreatic beta cells. These findings confirm the opposing roles of the two agents and highlight their usefulness in studying diabetes and glucose regulation in experimental models.

IDEAL OBSERVATION

SR. No	Parameters	Value
RAT 1		
1	Normal (Control) Analysis	82 mg/dl
2	Insulin Analysis	72 mg/dl
3	Streptozocin Analysis	115 mg/dl
RAT 2		
1	Insulin Analysis	80 mg/dl
2	Streptozocin + Insulin Analysis	92 mg/dl

RESULT: The results showed that administration of insulin significantly decreased blood glucose levels, indicating enhanced glucose uptake. In contrast, rats treated with streptozotocin exhibited a marked increase in blood glucose levels, confirming beta cell destruction and reduced insulin production. Combined treatment reflected the antagonistic effects of both agents on glucose regulation.