THU-Pharmacology-Homework-4

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1 Choice Qustion

- d.
 Glucagon promotes the glycogenolysis in liver.
- 2 b.
- 3 a.
- 4 a.
- 5 d.
- 6 b.

2 Subjective item

2.1 Type 1 diabetes VS Type 2 diabetes

Table 1: The difference between Type 1 and 2 diabetes

	Type 1	Type 2
Etiology	Autoimmune destruction of panceatic β -cells	In sulin resistence, with inadequate β -cell function to compensate
Insulin levels	Absent or negligible	Typically higher than normal
Insulin levels	Absent or negligible	Decreased
Age of onset	Typically $< 30 \text{ years}$	Typically > 40 years
Acute complications	Ketoacidosis	Hyperglycemia

2.2 The functions of important harmones

Table 2: The functions of important harmones

Harmones	Function	
insulin	Promotes uptake of glucose, amino acids, and fatty acids from blood into cells for storage as glycogen, protein, and triglyceride	
glucagon	Promotes glycogenolysis and gluconeogenesis in liver	
GLP-1	Increases β -cell mass and insulin secretion. Delays gastric emptying. Decreases food intake and glucagon secretion	
somatostatin	Decreases release of insulin and glucagon. Decreases GI tract motility and hormone release. Decreases growth hormone secretion	
amylin	Suppresses glucagon release. Slows gastric emptying. Decreases food intake	

2.3 The interaction of these hormones

Gl tract

Gastric
emptying

GlP-1 analogue
amylin analogue

Clucosidase

Clucosidases

Glucose
Inhibitors

Glucose
Inhibitors

Glucose
Inhibitors

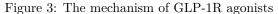
Glucose
Insulin
Ins

Figure 1: The interaction of these hormones

2.4 The mechanism of different anti-diabetic drugs

Sulfonylurea receptor Membrane depolarisation Calcium channel Sulfonylurea (open) Cell membrane K_{ATP} channel (closed) Pancreatic beta cell Ca²⁺ Glucose Insulin Calcium influx transporter (GLUT2) secretion Metabolism Glucose Insulin-containing granule KnowledgeDøse

Figure 2: The mechanism of sulfonylureas



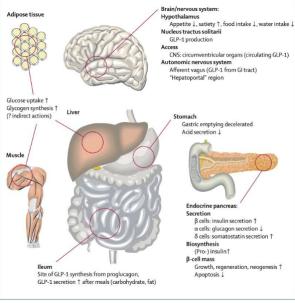
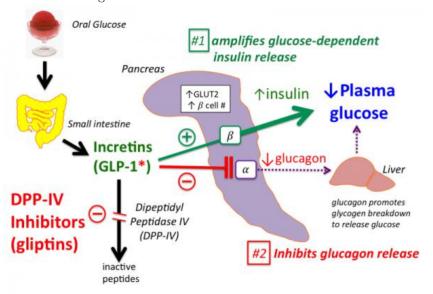


Figure 1: Physiology of GLP-1 secretion and action on GLP-1 receptors in different organs and tissues are proportional to the proportion of GLP-1 receptors and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs and the proportion of GLP-1 receptors are different organs are different organs. The proportion of GLP-1 receptors are different organs are different organs are different organs are different organization or different organs are different organization or different organization organizat

Figure 4: The mechanism of DPP-4 inhibitors



^{*} Physiological t $_{1/2}$ =2 mins due to rapid inactivation by DPP-IV

Figure 5: The mechanism of SGLT2 inhibitors

