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Treatment of Diabetes Mellitus – Seminar

Pharmacology II
Autumn 2023

Diabetes mellitus

Correctly assign the statements to one of the categories

Type 1 Diabetes mellitus

Type 2 Diabetes mellitus

Insulin resistance and impaired B cell function

Autoantibodies to B cell antigens

Autoimmune destruction of more than 90% of B cells

Manifestation in adulthood

Manifestation mostly before 30

Obesity is common

Dependence on exogenous insulin

Higher risk in patients with metabolic syndrome

Correctly assign the statements to one of the categories

Hypoglycemia

Hyperglycemia

Possible complication of insulin therapy

Caused by a missed dose of insulin

Caused by higher doses of sulphonylureas

Caused by high insulin levels

Treatment: eat or drink 10–20 g of fast-acting carbohydrates

Symptoms – dizziness, hunger, sweating

Polyuria, polydipsia; chronic condition – urinary tract infections

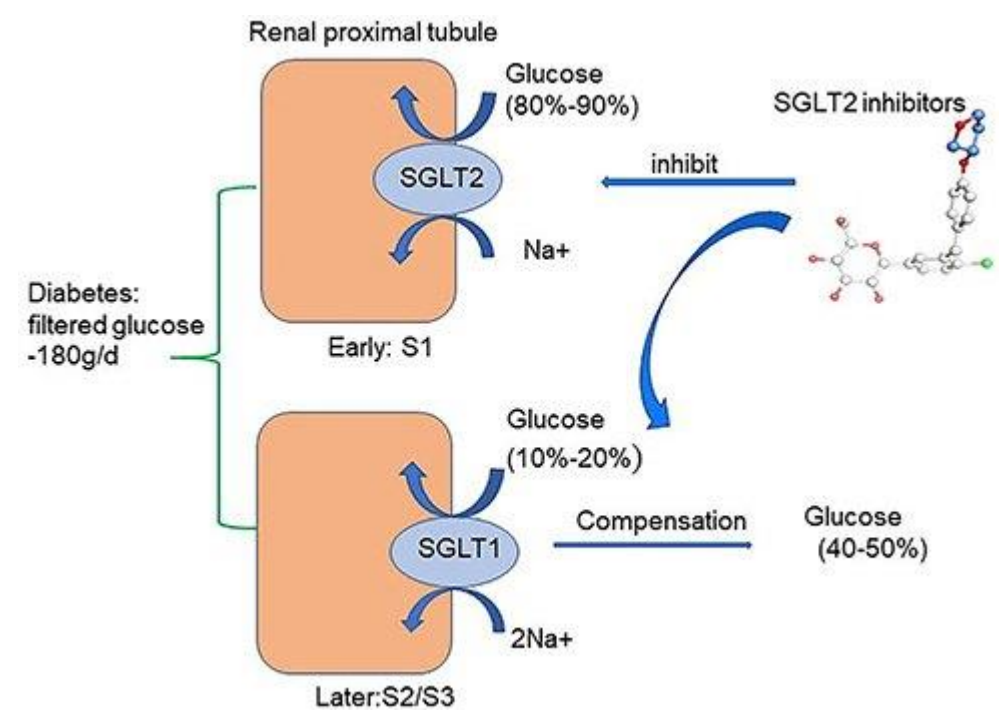
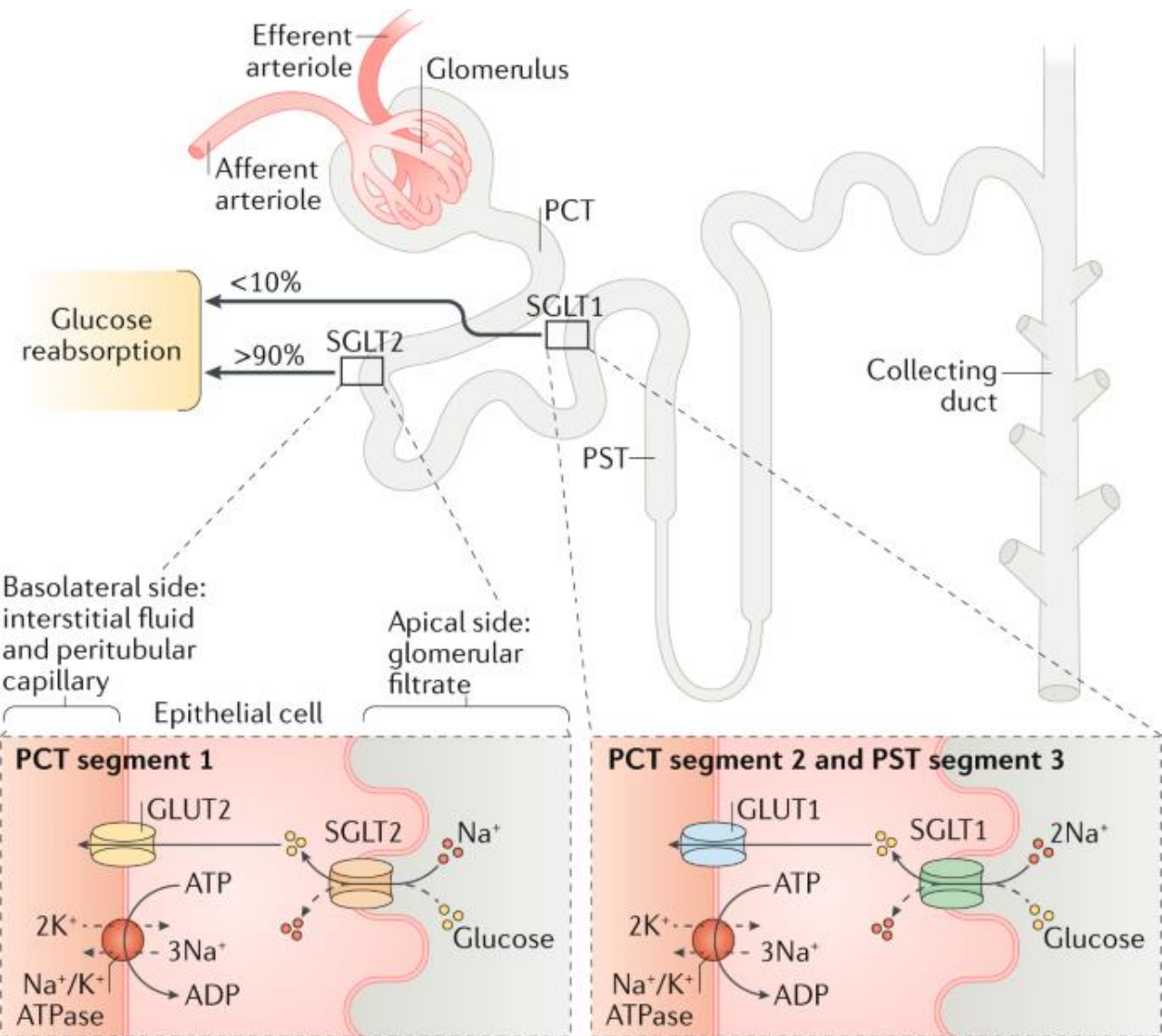
Treatment: insulin administration

Treatment: glucagon (intramuscular injection or newly as a nasal powder)

Specify these terms:

➤ GLUT4

➤ SGLT-2



Li N, Zhou H. SGLT2 Inhibitors: A Novel Player in the Treatment and Prevention of Diabetic Cardiomyopathy. *Drug Des Devel Ther.* 2020;14:4775-4788

Cowie, M.R., Fisher, M. SGLT2 inhibitors: mechanisms of cardiovascular benefit beyond glycaemic control. *Nat Rev Cardiol* 17, 761-772 (2020).

Insulin – Substitution Therapy

→ Analogue Insulin

Rapid acting

or

Long acting

Decide:

- Correction of postprandial hyperglycemia
- Mimic basal secretion
- Start to act immediately
- After application gradual slow absorption
- The duration of activity is up to 24 hours; lack of a peak activity
- Lispro, Aspart, Glulisin
- Glargin, Detemir, Degludec

Side Effects of Antidiabetic Drugs

Create pairs of antidiabetic drugs with their typical side effects:

Antidiabetic drugs
Sulphonylureas
Biguanides → Metformin
Thiazolidindiones
Alpha-Glucosidase Inhibitors
SGLT-2 inhibitors

Side effect
Risk of bone fractures
Lactic acidosis (rarely)
Diarrhea, nauzea, risk of ↓ vit. B12 absorption
Weight gain
Risk of urinary infections
Gastrointestinal disturbances
Risk of hypoglycemia
Fluid retention with a risk of heart failure

Antidiabetic Drugs and Weight

Weight gain

Weight neutral

Weight loss

Match antidiabetic drugs with their properties:

- Sulphonylureas
- Metformin
- Meglitinides
- Alpha-Glucosidase Inhibitors
- SGLT-2 inhibitors
- Glucagon-like peptide (GLP-1) agonists

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