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Oral hypoglycemic agents

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Oral Hypoglycaemic Agents

These drugs lower blood glucose levels and are effective orally. The chief drawback of insulin is—it must be given by injection.

Classification:

1. Sulfonyl ureas:

- First generation: Tolbutamide, Chlorpropamide
- Second generation: Glibenclimide, Glypizide, Gliclazide, Glimepiride

2. Biguanides: Phenformin, Metformin

3. Meglitinide analogues: Repaglinide, Nateglinide

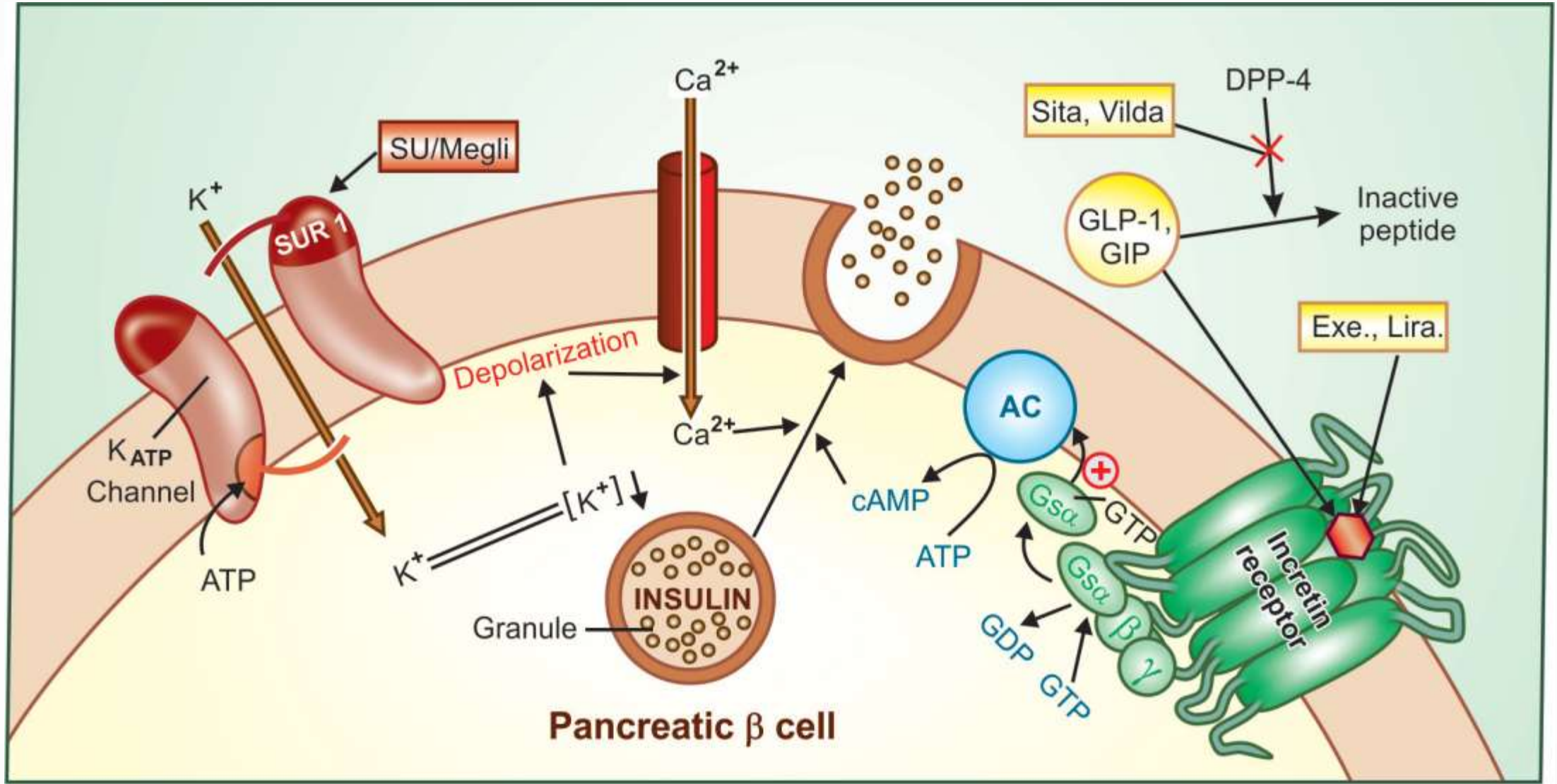
4. Thiazolidinediones: Rosiglitazone, Pioglitazone

5. α Glucosidase inhibitors: Acarbose, Miglitol

Sulfonylureas (K_{ATP} Channel blockers)

All SUs have similar pharmacological profile, their sole significant action being lowering of blood glucose level in normal subjects and in type 2 diabetics, but not in type 1 diabetics.

MOA- The sulfonylureas (SU) and meglitinide analogues (Megli) block the sulfonylurea receptor (SUR1) which constitutes a subunit of the inwardly rectifying ATP-sensitive K⁺ channel (K_{ATP}) in the membrane of pancreatic β cells. The inward flow of K⁺ ions is thereby restricted, intracellular K⁺ concentration falls and the membrane is partially depolarized augmenting Ca²⁺ channel opening as well as release of Ca²⁺ from intracellular stores. The Ca²⁺ ions promote fusion of insulin containing intracellular granules with the plasma membrane and exocytotic release of insulin.



Pharmacokinetics:

- All SUs are well absorbed orally
- Low volumes of distribution (0.2–0.4 L/kg)
- The metabolites (active/inactive) are excreted in urine

Adverse effect:

Hypoglycaemia

Hypersensitivity

Nausea, vomiting, flatulence, diarrhoea or constipation, headache and paresthesias are generally mild and infrequent

References

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