



Diabetes drug review

By

L.Mahmoudieh,MD, Endocrinologist

Assistant Professor of Shahid Beheshti University of Medical Science

Agenda

1

pathophysiology

2

Diabetes subtypes

3

Oral agents

4

Insulin therapy

Agenda

1

pathophysiology

2

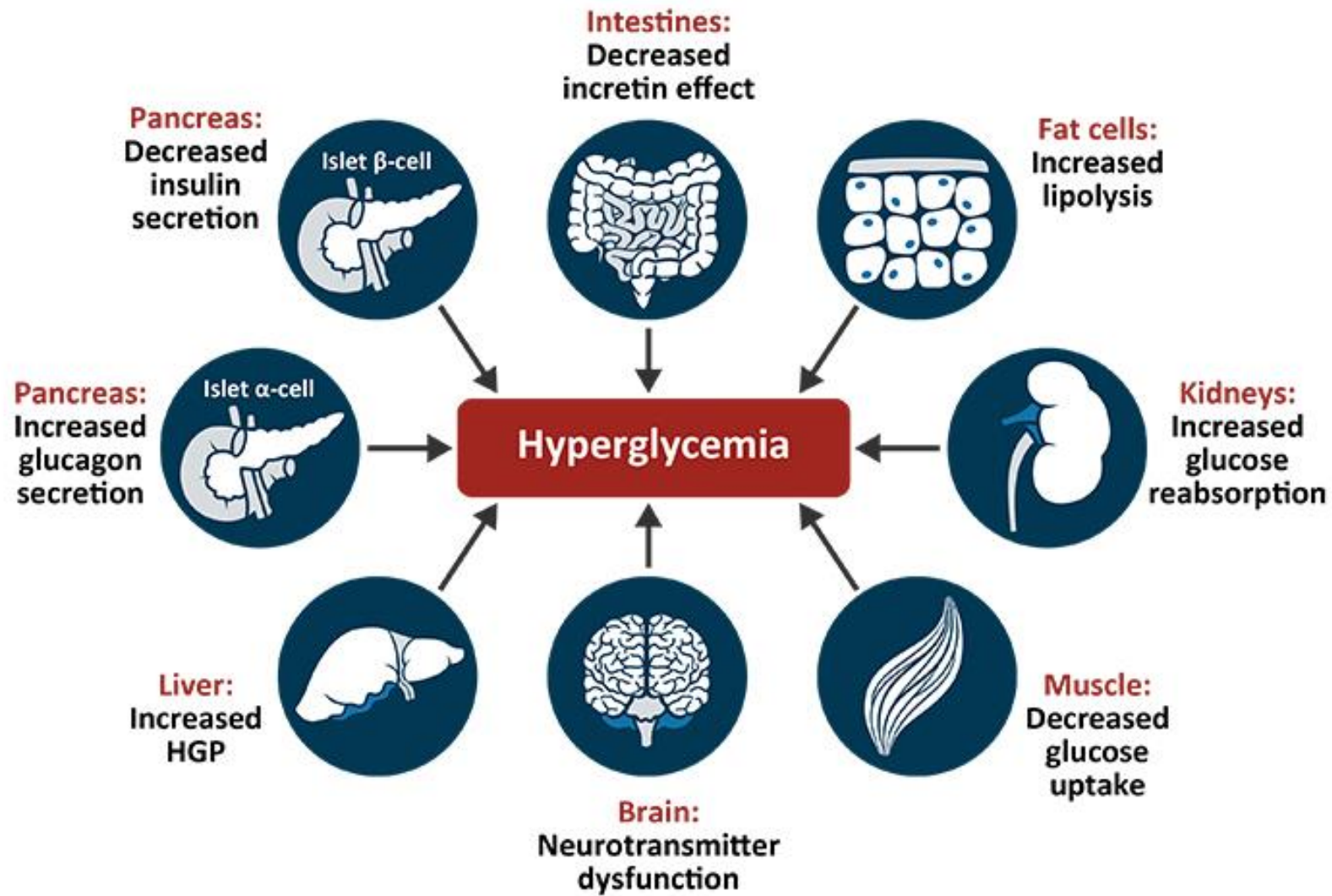
Diabetes subtypes

3

Oral agents

4

Insulin therapy



Agenda

1

pathophysiology

2

Diabetes subtypes

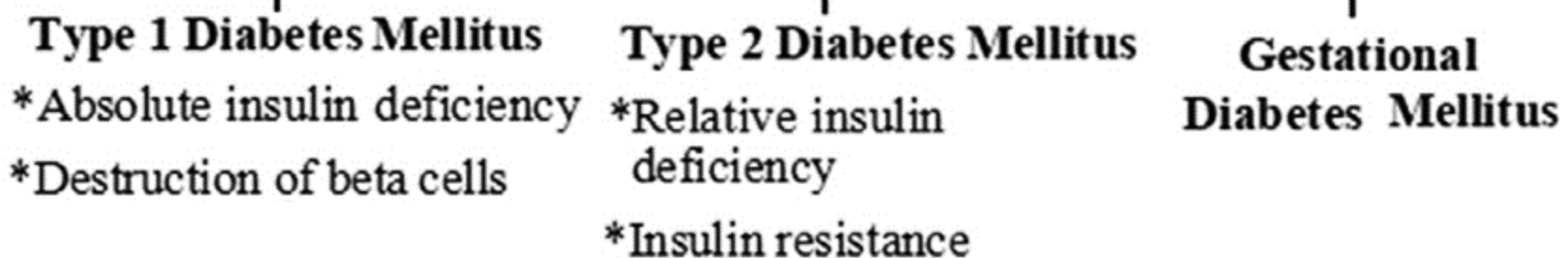
3

Oral agents

4

Insulin therapy

DIABETES MELLITUS



Agenda

1

pathophysiology

2

Diabetes subtypes

3

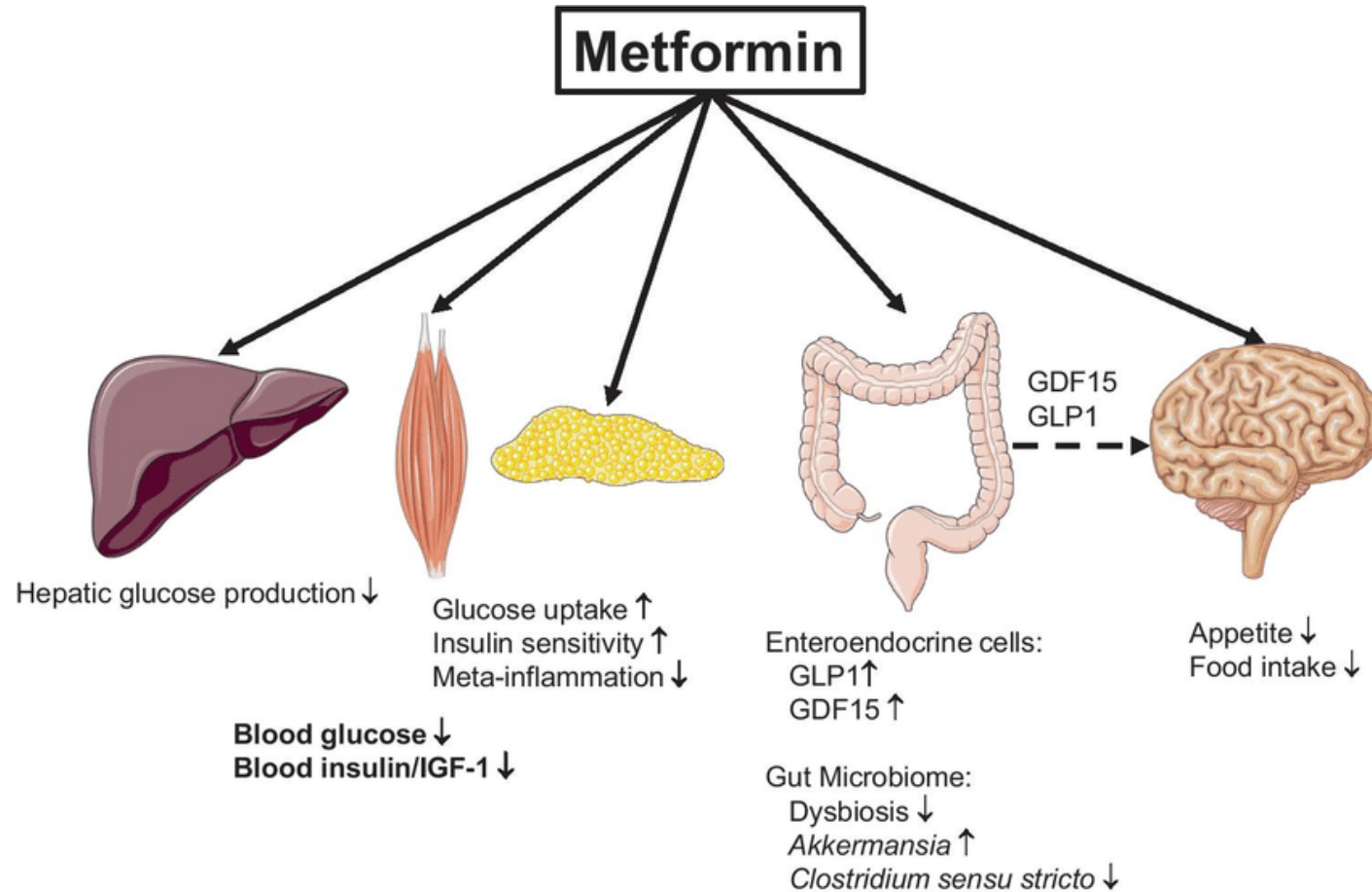
Oral agents

4

Insulin therapy



Biguanides (mechanism of action)



Biguanides (Effects)

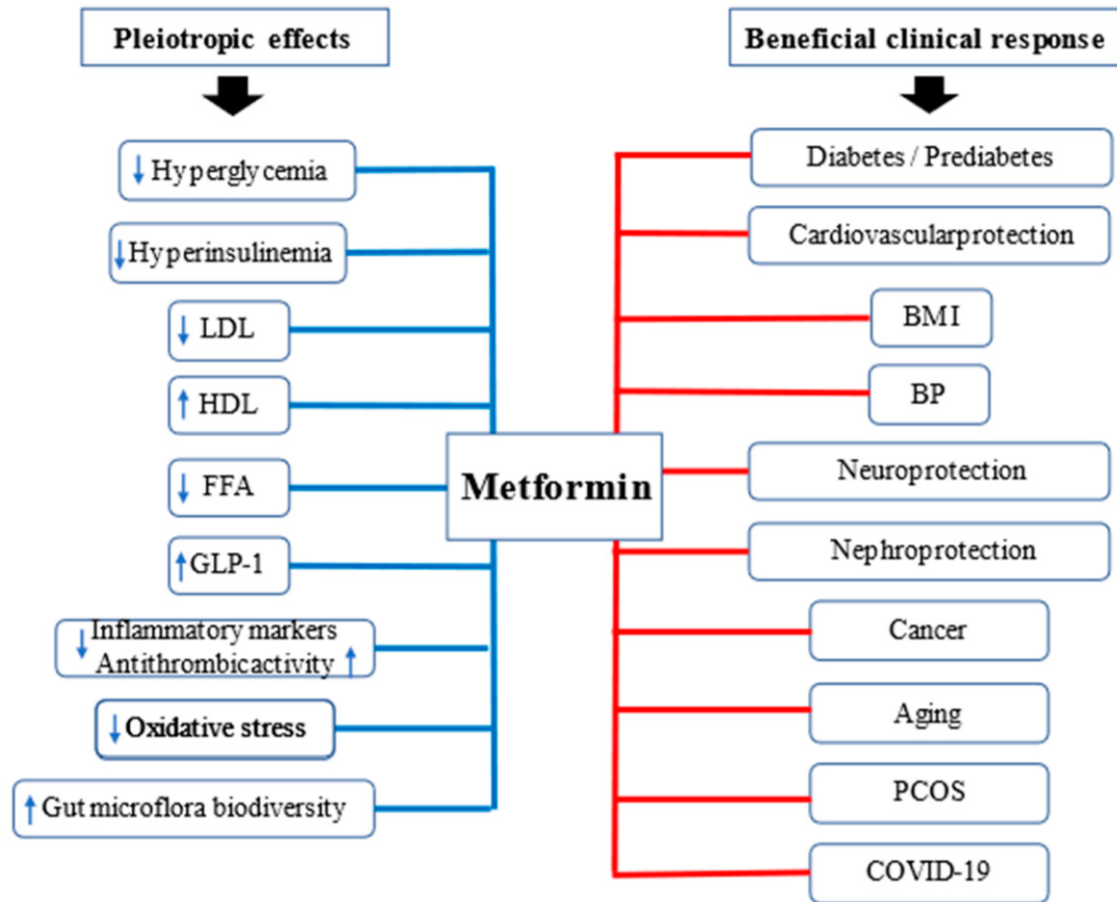


Table 1. The old recommendations and new possibilities for the use of metformin.

Approved to Treat	No Formal Indication (Used Off-Label)	Investigated for New Applications
T2DM	Prediabetes/obesity	Cardioprotection
	T1DM	Nephroprotection
	GDM	Cancer
	PCOS	Anti-aging
	NAFLD	COVID-19

Biguanides (Side effects and contraindications)

Side effects



- **Minor :**
 - Nausea
 - Stomach pain
 - Bloating
 - Diarrhea
 - Constipation

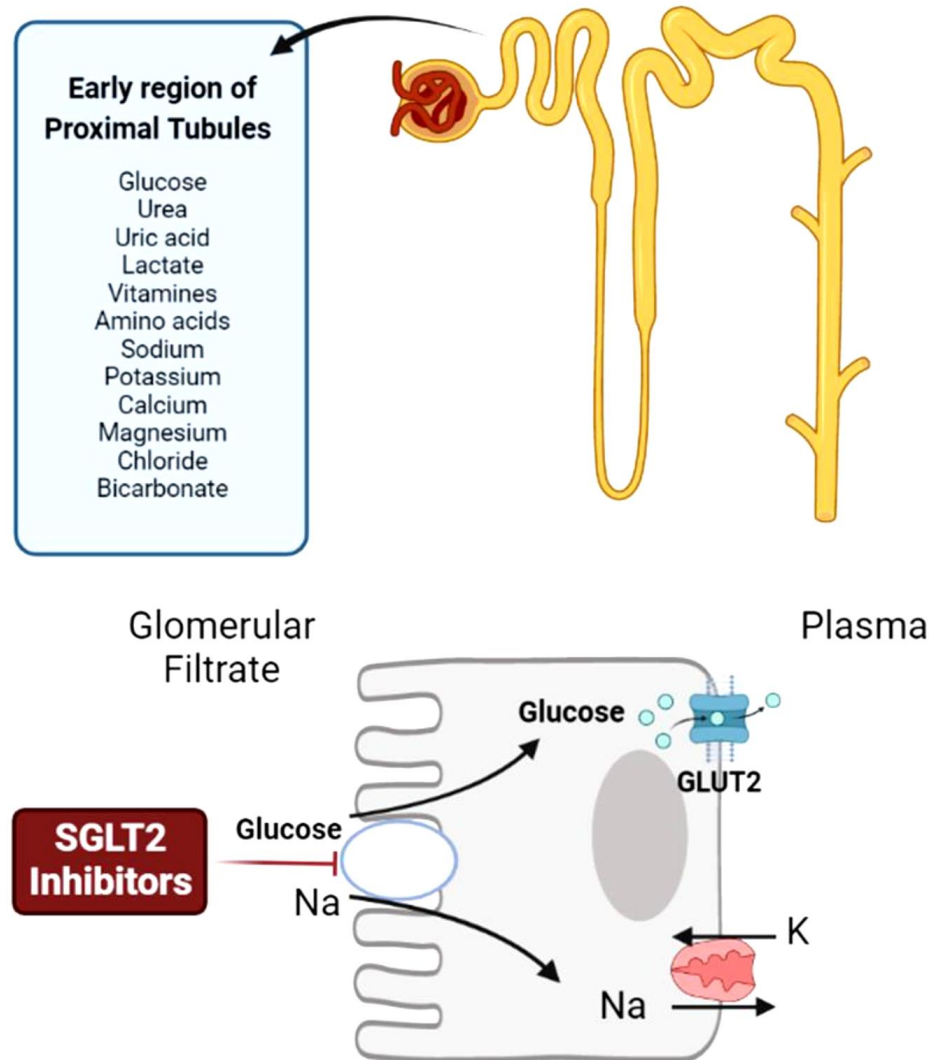
- **Major:**
 - Lactic acidosis

Contraindications



- CKD or AKI
- Severe heart failure
- Severe/active liver disease
- Hemodynamic instability
- Contrast studies

sodium glucose cotransporter 2 inhibitor (mechanism of action)



sodium glucose cotransporter 2 inhibitor (Effects)

Vascular and hemodynamic effect

- Decreased blood pressure
- Decreased arterial stiffness
- Improved endothelial function
- Decreased intravascular volume
- Decreased preload and afterload

Renal effects

- Decreased RAAS activity
- Reduced intraglomerular pressure
- Increased in natriuresis, diuresis and uricosuria
- Decreased albuminuria

Cardiac effects

- Decreased myocardial hypertrophy and fibrosis
- Improved myocardial energetics
- Decreased myocardial oxidative stress
- Decreased myocardial fat accumulation

Metabolic effects

- Weight loss
- Decreased total body and visceral adiposity
- Decreased uric acid level
- Decreased liver steatosis and hepatocellular injury

sodium glucose cotransporter 2 inhibitor

(Side effects and contraindications)

Side effects



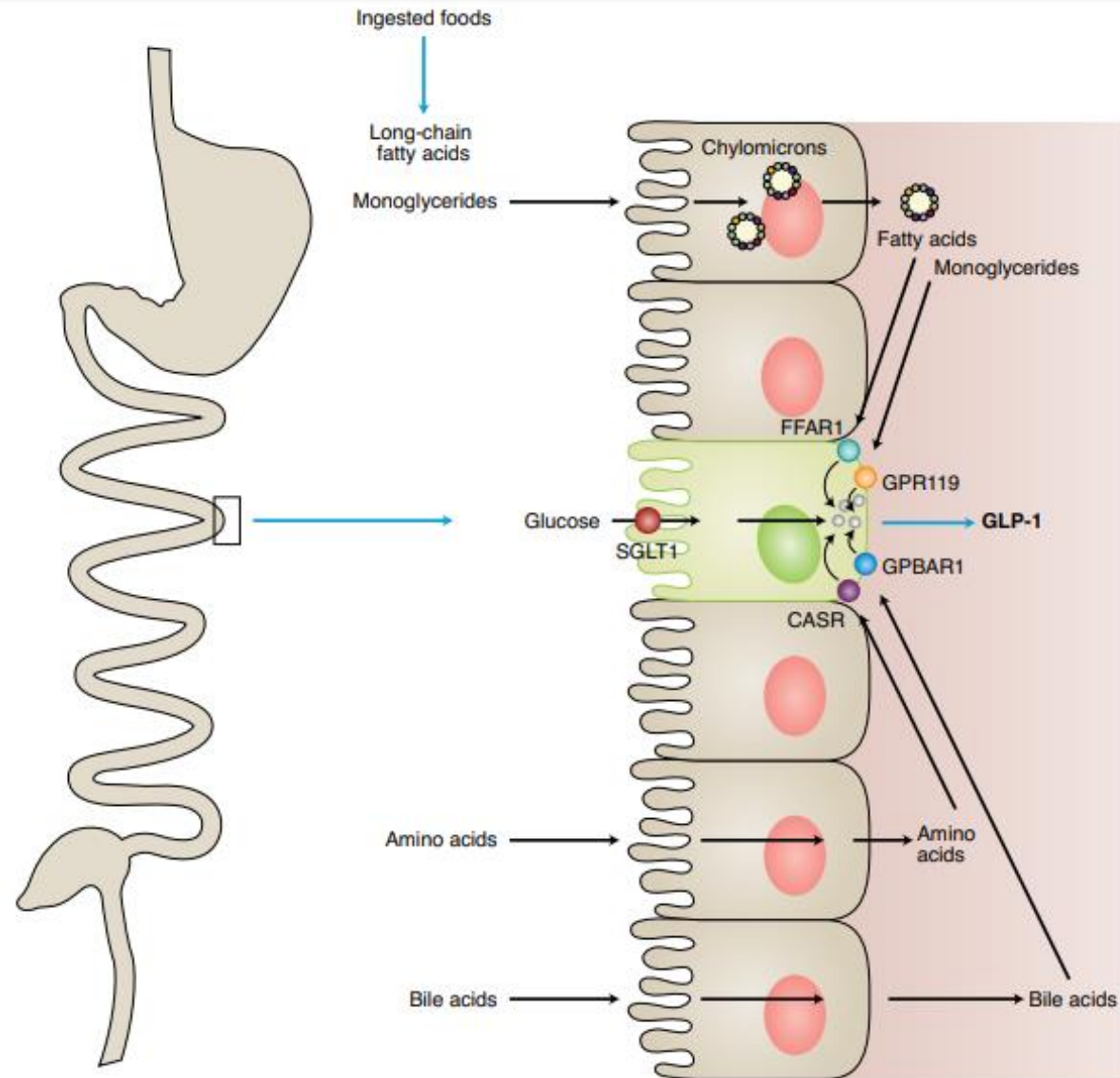
- Urinary tract infections
- Genital mycotic infections
- Volume depletion
- Hypotention
- Euglycemic ketoacidosis
- Bone fracture

Contraindications

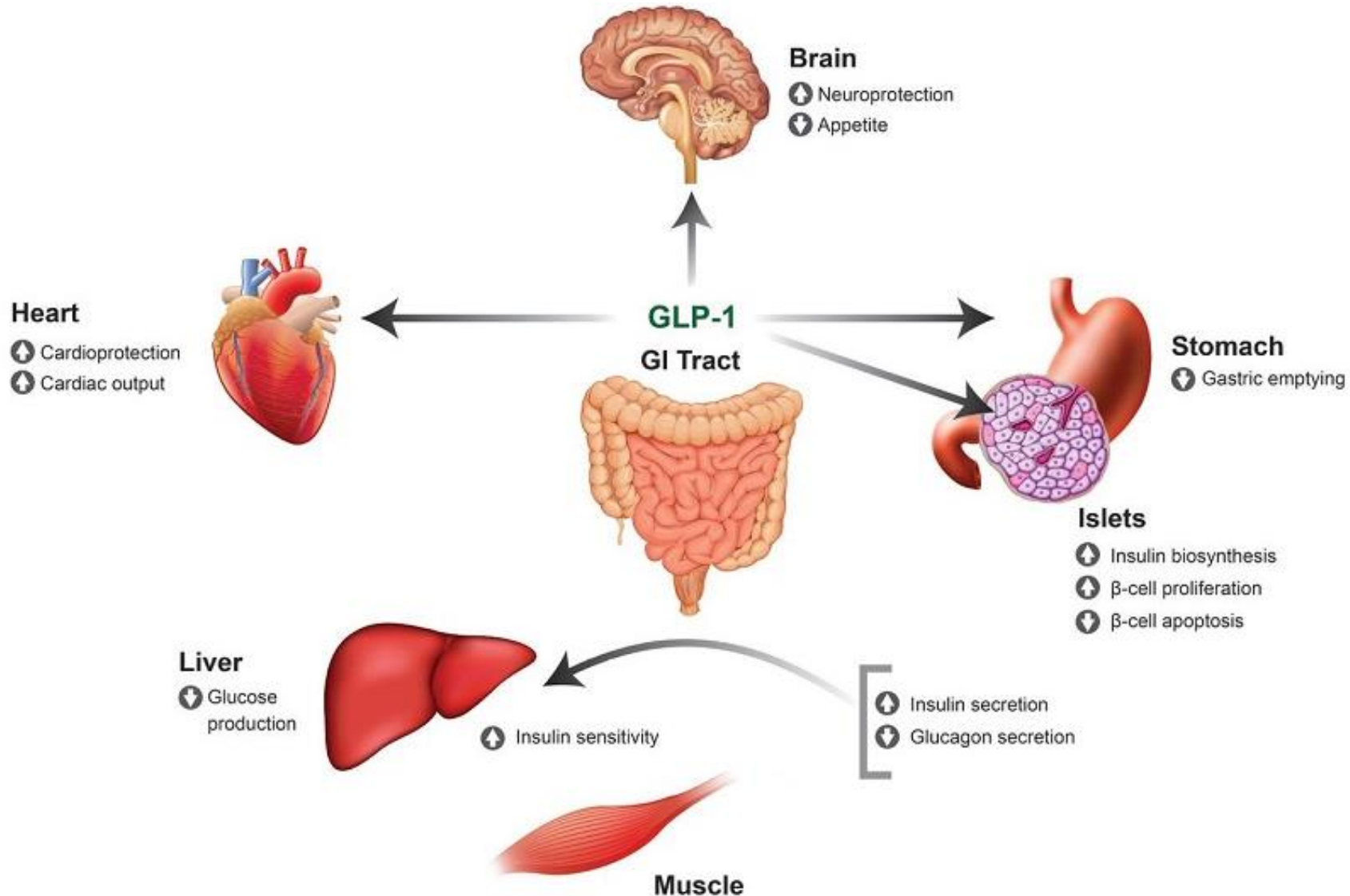


- Recurrent UTI/ genital infection
- GFR < 20 ml/min
- Prior DKA

glucagon-like peptide-1 receptor agonists (mechanism of action)



glucagon-like peptide-1 receptor agonists (Effects)



glucagon-like peptide-1 receptor agonists



glucagon-like peptide-1 receptor agonists

(Side effects and contraindications)

Side effects



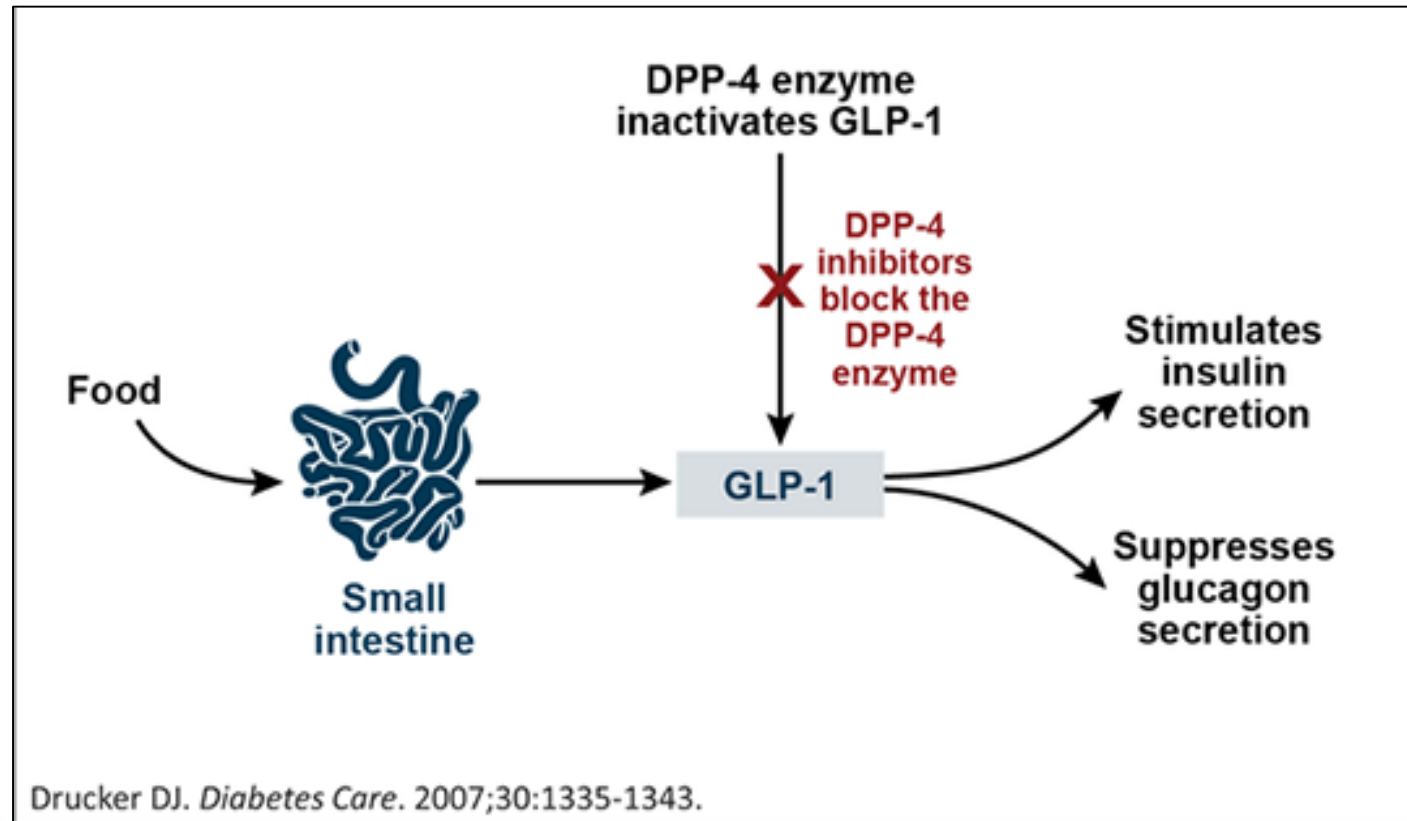
- Nausea/Vomiting
- Diarrhea
- Pancreatitis (no established causality)
- Gallbladder/biliary disease

Contraindications

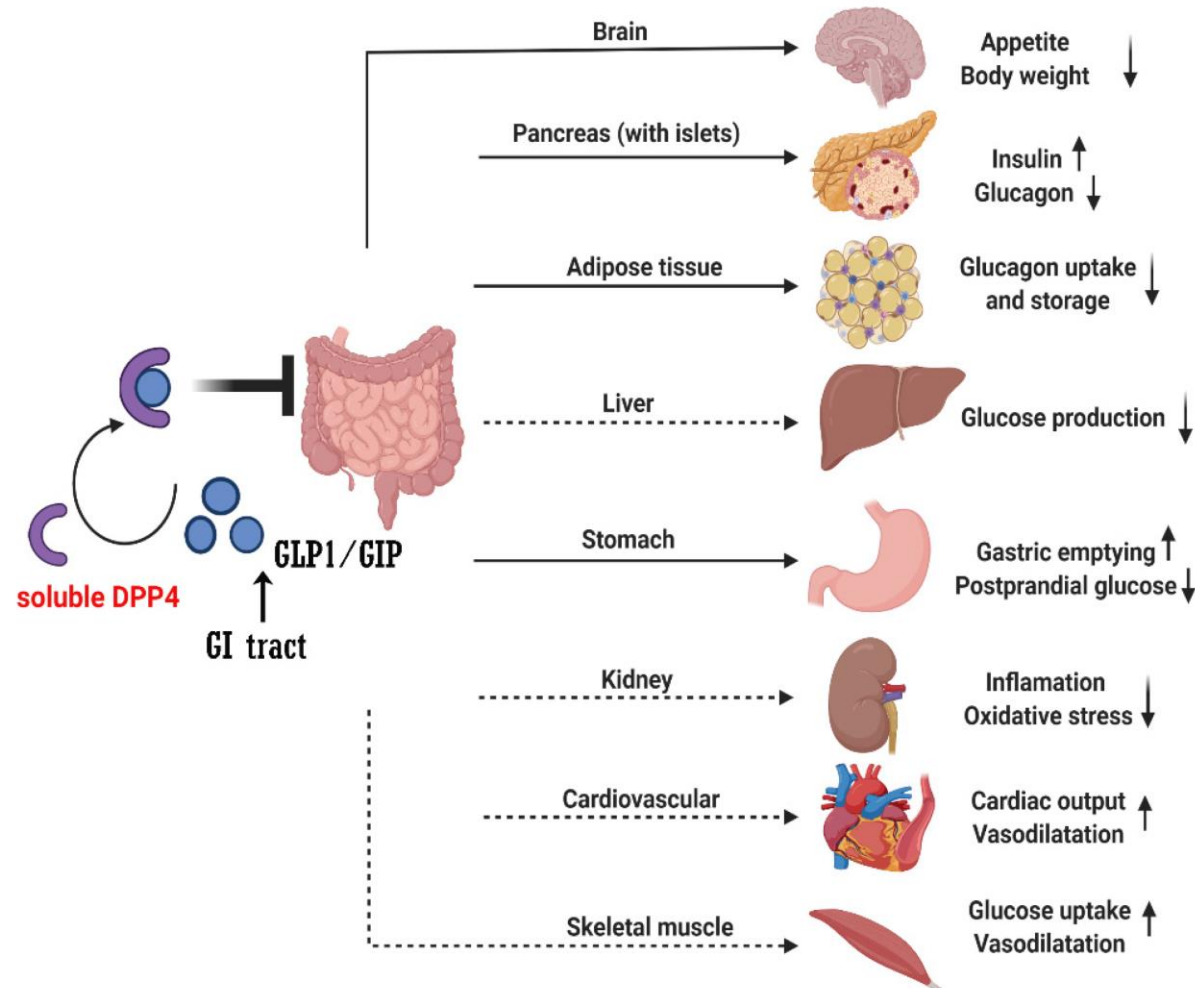


- Personal or family history of MTC
- Pregnancy and lactation
- Allergy or intolerance to SGLT2Is

dipeptidyl peptidase-4 (mechanism of action)



dipeptidyl peptidase-4 (Effects)



dipeptidyl peptidase-4

(Side effects and contraindications)

Side effects



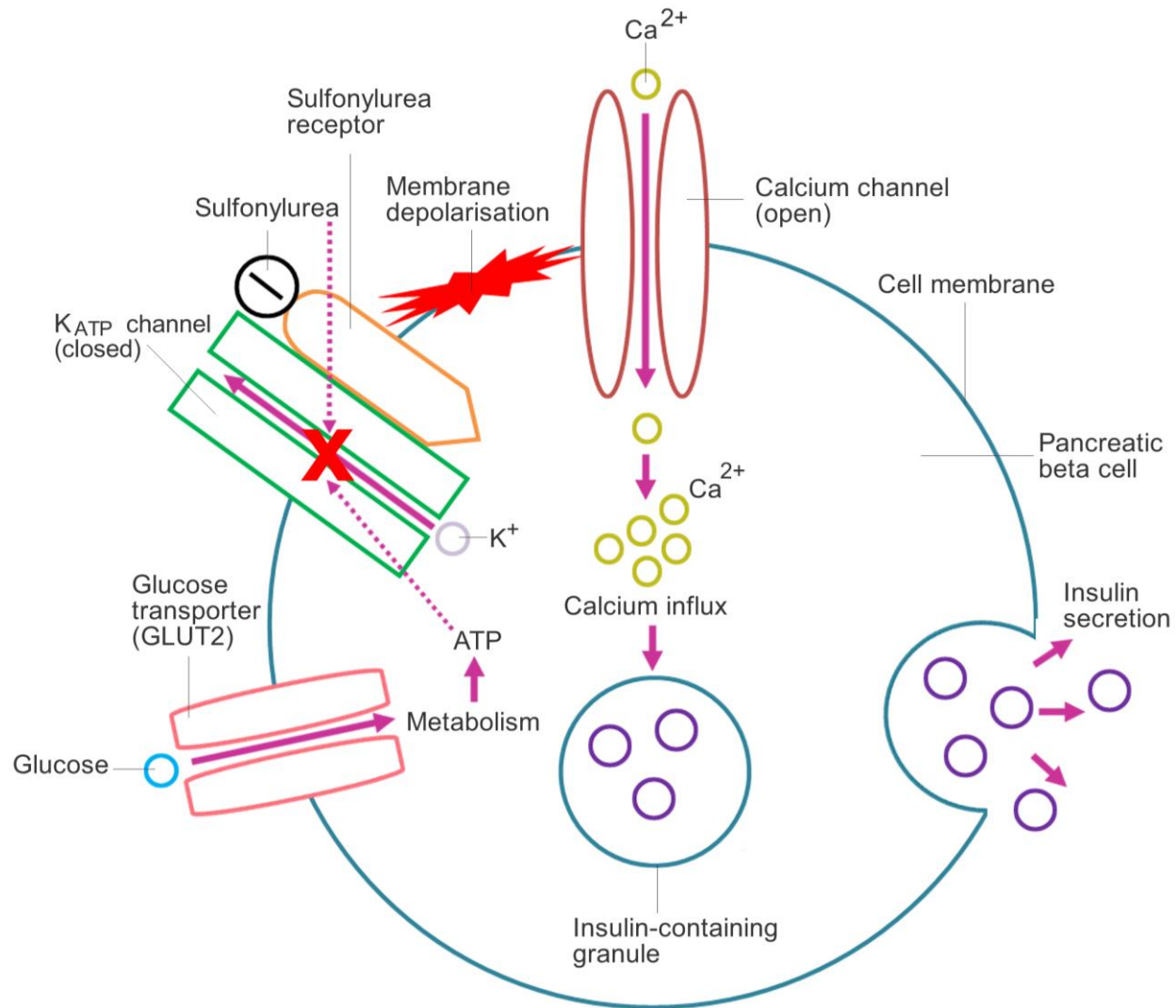
○ **Pancreatitis** (no established causality)

Contraindications



- History of pancreatitis
- Renal dysfunction (for Sitagliptin)
- Hepatic dysfunction (for Linagliptin)

Sulfonylureas(mechanism of action)



sulfonylureas

(Side effects and contraindications)

Side effects



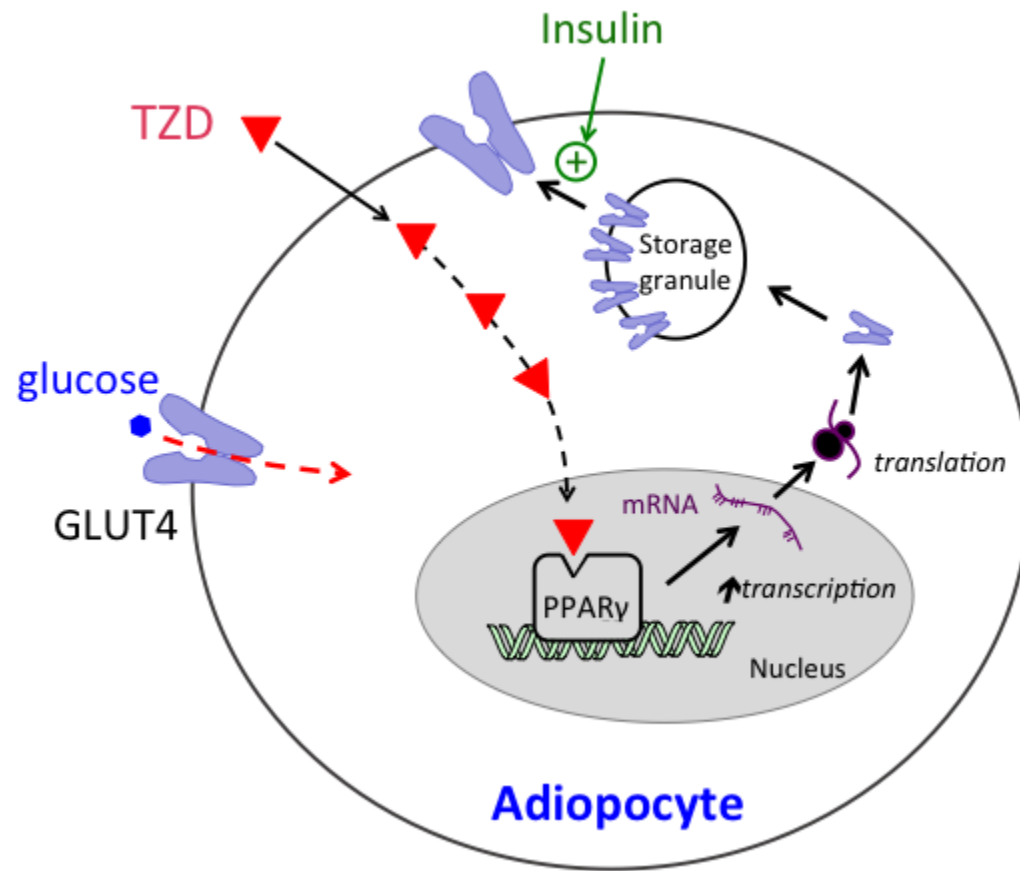
- Hypoglycemia
- Weight gain

Contraindications



- Severe renal dysfunction
- Severe hepatic dysfunction

Thiazolidinediones (mechanism of action)



Thiazolidinediones (Effects)

- Increased insulin sensitivity in:

-  → reduced gluconeogenesis

-  → increased glucose utility

-  → increased glucose utility and decreased FFA release

Thiazolidinediones

(Side effects and contraindications)

Side effects



- Fluid retention
- Weight gain
- Fractures

Contraindications



- Heart failure or overload
- Hx of Fx
- LFT > 5 times ULN
- Macular edema

Agenda

1

pathophysiology

2

Diabetes subtypes

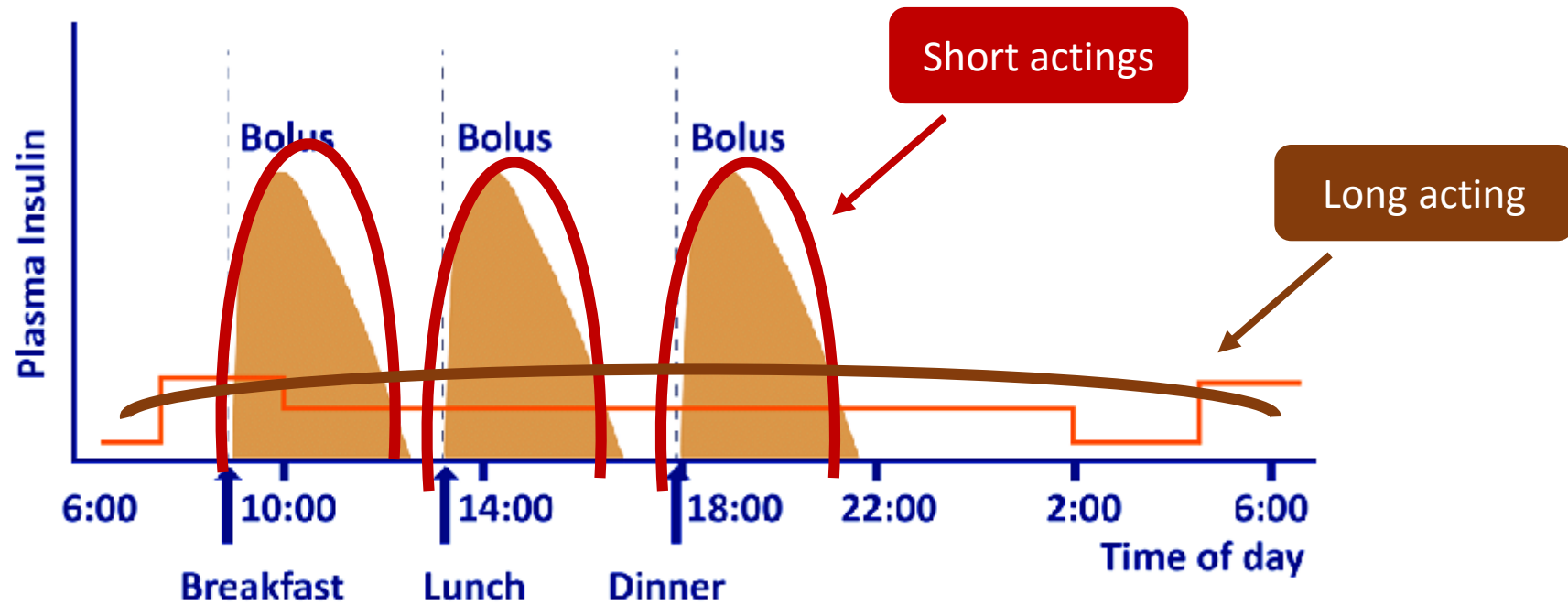
3

Oral agents

4

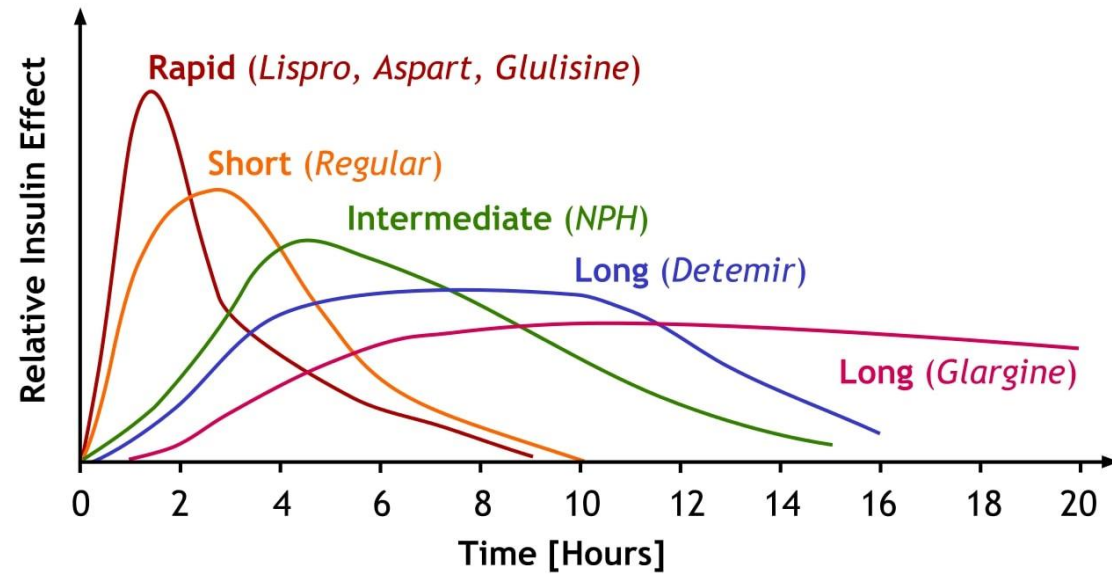
Insulin therapy

Insulin



↑ Denotes time of bolus activation

Insulin



Type of insulin	Onset	Peak	Max duration of effectiveness
Rapid Acting	15 MINUTES	1 HOUR	4 HOURS
Short Acting	30 MINUTES	2-3 HOURS	3-6 HOURS
Intermediate Acting	2-4 HOURS	4-12 HOURS	12-18 HOURS
Long Acting	2 HOURS	DOES NOT PEAK	24-36 HOURS

summary

