

1. Insulin
MOA: Bind to and activate Tyrosine Kinase – Facilitate Glucose uptake/Utilization, Glycogen storage
Insulin Lispro, Insulin Aspart, Insulin Glulisine – Rapid acting
NPH, Isophane – Intermediate acting
Insulin Detemer, Insulin Glargine – Long acting
Insulin Degludec – Very Long Acting
USE: Type I and II Diabetes, Surgery
SE: Hypoglycemia, lipodystrophy
CI: Beta blockers

1a. Glucagon – insulin overdose
MOA: Promotes gluconeogenesis and glycogenolysis
SE: N/V, tachycardia

2. Sulfonylureas
MOA: Block Pancreatic K⁺ channels → Insulin Release
Glyburide, Glimeperide, Glipizide, Tolbutamide
USE: Type II Diabetes – Caution in pts with liver failure
SE: Hypoglycemia, Weight Gain, Sulfur allergy, Disulfiram effects (1st gen) – Overdose – Octreotide

3. Meglitinides
MOA: Block Pancreatic K⁺ channels → Insulin Release
Repaglinide, Nateglinide
USE: Type II Diabetes
SE: Hypoglycemia, Weight Gain – Overdose – Octreotide

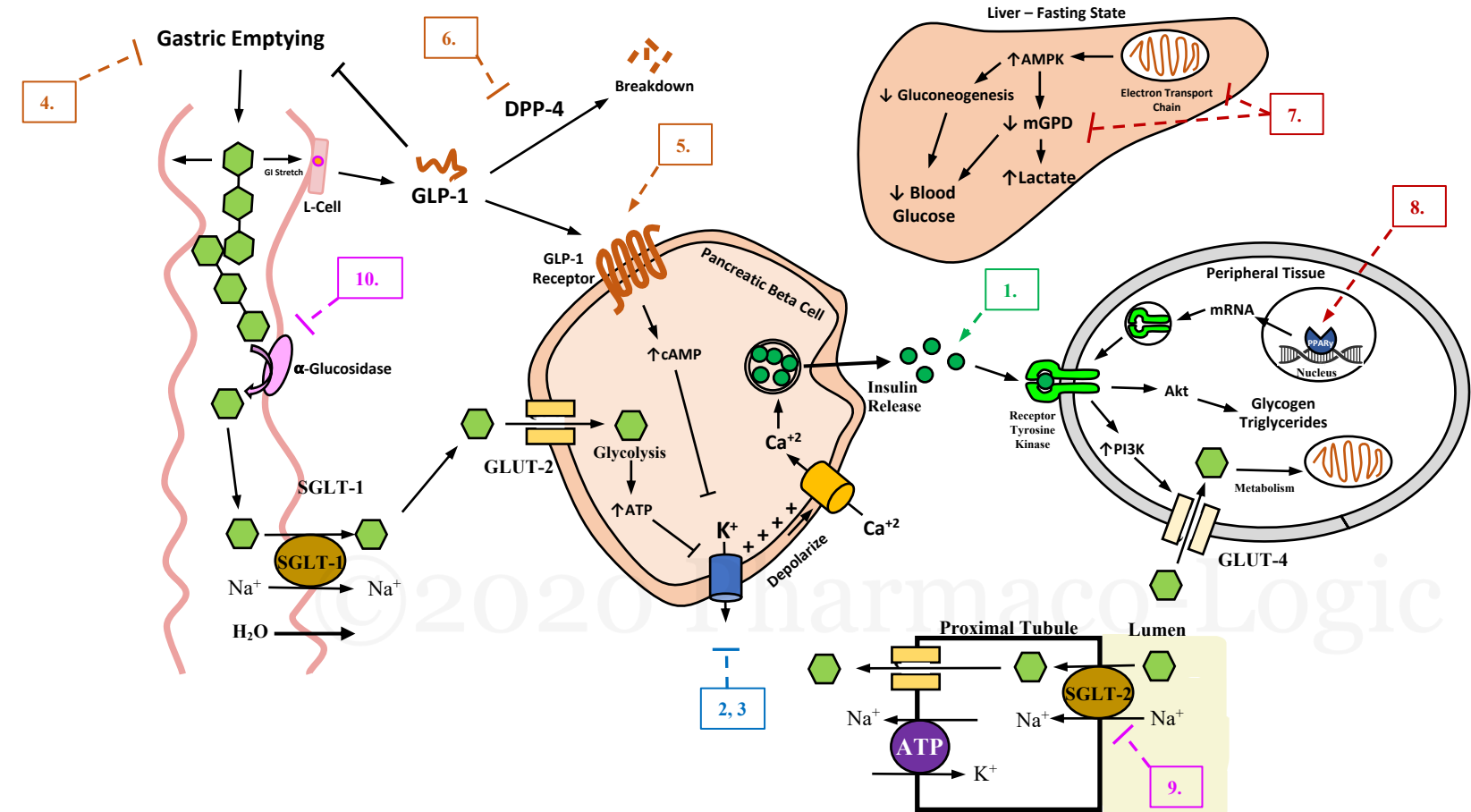
4. Amylin Analogs
MOA: Activates the Amylin receptor - ↓ glucagon release, ↓ gastric emptying, ↑ satiety
Pramlintide
USE: Type I and II Diabetes
SE: Hypoglycemia, lipodystrophy

5. Incretin analogs - GLP-1 agonists
MOA: Activates the GLP-1 receptors – Promotes insulin release, ↑ satiety, ↓ gastric emptying – CV Protective
Exenatide, Liraglutide, Lixisenatide, Dulaglutide,
USE: Type II Diabetes, CKD
SE: Pancreatitis, Thyroid Cancer, N/V, Renal injury(exenatide)

6. DPP-4 inhibitors
MOA: Inhibition of DPP-4 → Increased GLP-1 activity
Sitagliptin, Linagliptin, Vidlagliptin, Saxagliptin
USE: Type II Diabetes, avoid in HF
SE: Pancreatitis, Joint pain, URI

Insulin Secretagogues

Gut Hormone Modulators



Insulin release	
Increase	Decrease
Glucose	Glucagon
Beta 2 Agonists	Beta Blockers
Alpha 1 Antagonists	Alpha 2 Agonists
Cholinergic Agonists	Cholinergic blockers
Theophylline	Octreotide

GLUT1	RBC and BBB - LOW Km for Glucose
GLUT2	Liver & Pancreas - High Km
GLUT3	Brain - Low Km
GLUT4	Skeletal muscle and adipose tissue - insulin sens.
GLUT5	Fructose transporter
SGLT1	Small intestine, kidney
SGLT2	Proximal Tubule - Kidney

7. Biguanides
MOA: Inhibition of mGDP → ↓ Gluconeogenesis, ↑ Glycolysis
Metformin
USE: Type II Diabetes/prediabetes (1st line)
SE: Lactic Acidosis (↑ Anion gap), B12 deficiency, Upset GI, weight loss
CI: chronic alcohol use, Elderly patients (>80)

8. Glitazones
MOA: Activation of PPARγ → ↑ Transcription of metabolic genes
Rosiglitazone, Pioglitazone
USE: Type II Diabetes
SE: Liver toxicity, Edema, Make HF worse (Rosi), Osteoporosis, Weight gain

9. SGLT-2 Inhibitors
MOA: Inhibit renal SGLT-2 transporters → Facilitate Renal Glucose Excretion – CV Protective
Canagliflozin, Dapagliflozin, Ertugliflozin
USE: Type II Diabetes, CKD
SE: DKA, Hypovolemia, Amputation(Cana), Fournier's Gangrene hyperkalemia, Yeast infection/UTI, Nec. peritonitis

10. Glucosidase Inhibitors
MOA: Inhibit α-glucosidase → Prevent Intestinal Glucose Absorption
Acarbose, Miglitol
USE: Type II Diabetes
SE: GI effects, Flatulence, diarrhea, Hepatitis

Metabolic Modulators

Glucose Excreting Agents