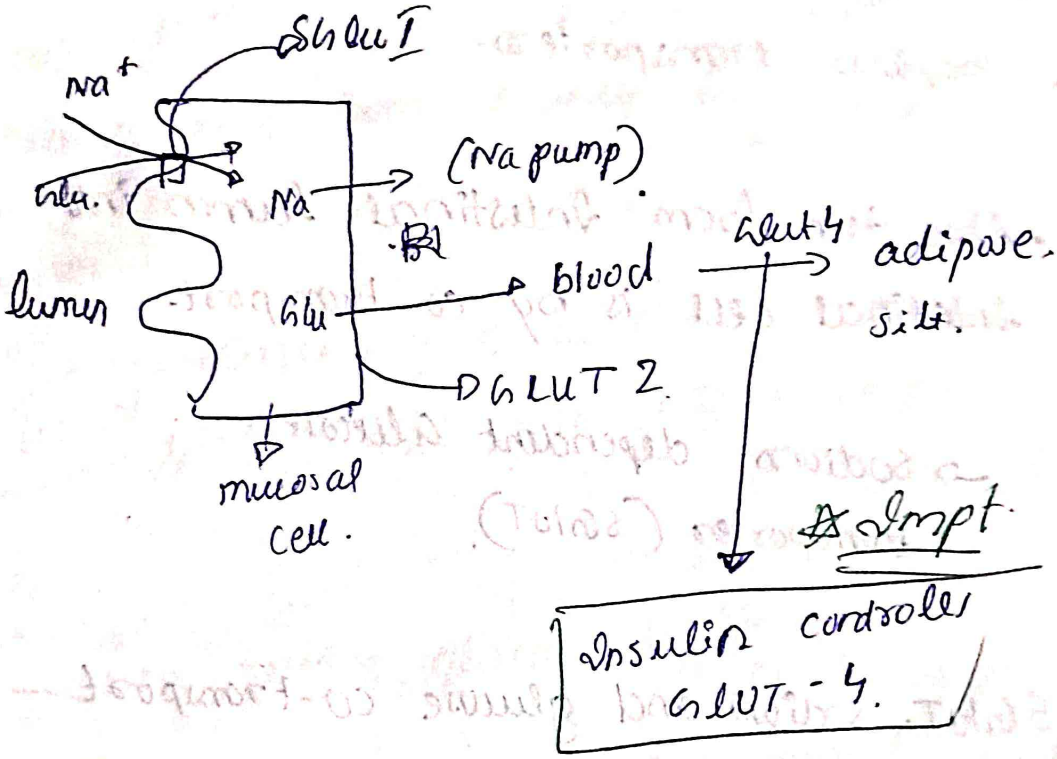
4/10/23.

Absorption of Carbohydrates:

- Absorption takes place in the duodenum and upper jejunum of small intestine.
- Only monosaccharides are absorbed by the intestine.
- minute quantities of disaccharides that may be absorbed are immediately eliminated through kidneys

• Absorption rate.

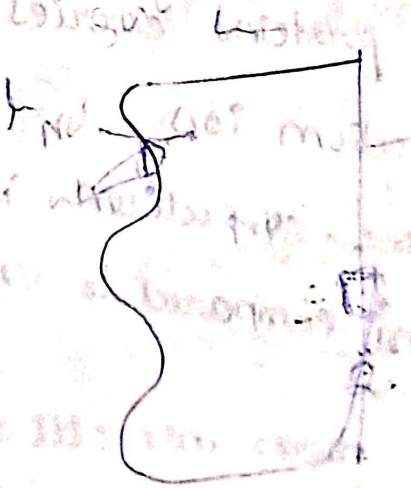
galactose > glucose > fructose



Cotransport

SGLUT-1 : Intestine.

SGLUT-2 :



8 mark:

Absorption of Glucose.

- Glucose is polar, it cannot diffuse through lipid bilayer of cell membrane.
- Requires transporters.

- Absorption from Intestinal lumen into Intestinal cell is by co-transport.

→ Sodium dependent Glucose transporter (SGLUT).

SGLUT. sodium and glucose co-transport—

Carrier proteins carries glucose along with sodium ion.

The conc-of sodium is high in Intestinal lumen compared to mucosal cell.

Sodium moves into cells along it's con. gradient and simultaneously glucose is transported into cells.

The sodium is later expelled by sodium pump. (sodium potassium ATPase) with utilization of energy.

This type of co-transport is also utilized to reabsorb glucose from kidney tubules.

~~Transporter in~~

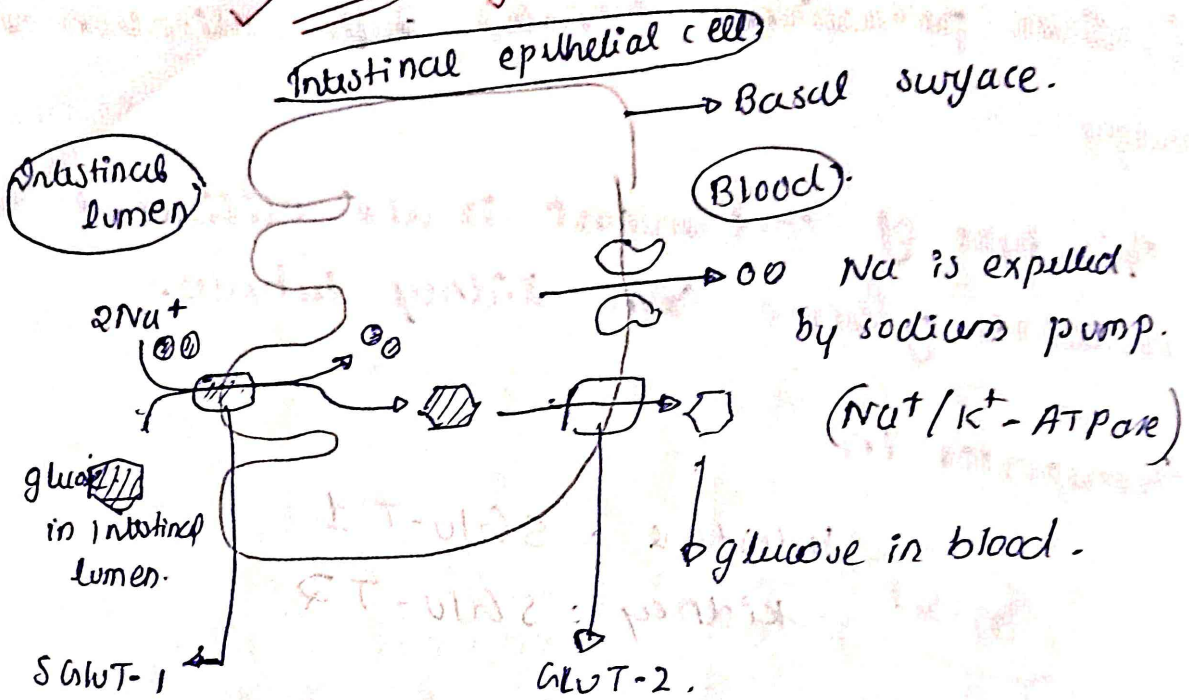
Imark
Intestine : SGlu-T1
Kidney : SGlu-T2.

uniport system release glucose into blood.

- Intestinal cells release glucose into blood stream by the carrier mechanism called Glucose transporter type 2 (Glu T2)

- transporter is not dependent on Na, but it is a uniport facilitated diffusion system.

✓ Impt figure.



- Intestinal absorption of glucose. At the Intestinal lumen, absorption is by sodium dependent glucose transporter (SGLU T) and at blood vessel site!

GLUT4 in muscle & Adipose Tissue.

- Major glucose transporter in ~~kidney~~ skeletal muscle, heart muscle, adipocytes.
- GLUT4 is under Insulin control.
- Insulin induces GLUT-4 & ↑ glucose uptake.

absorption of other sugars.

- Galactose is absorbed by the sodium dependent glucose transporters in the luminal side.
- Fructose: facilitated diffusion utilising GLUT5.
- pentoses: simple diffusion.

Glucose transporters. 8 mark.

- wide group of transmembrane proteins.
- Facilitate the transport of glucose over plasma membrane.

	Present in	Properties.
GluT 1	RBC, brain, kidney.	Glucose uptake in most of the cells.
GluT 2	serosal surface of intestinal cells, liver, beta cells of pancreas.	Glucose uptake in liver; glucose sensor in beta cells.

GLUT 3	Neurons Brain	Glucose into brain cells.
GLUT 4 ✓	Skeletal muscle	Insulin mediated, muscle, adipose tissue glucose uptake
Glut - 5	small Intestine, testis, sperm, kidney	fructose transporter poor ability to transport glucose.
SGlut	Intestine, kidney	Cotransport, from lumen into cell.