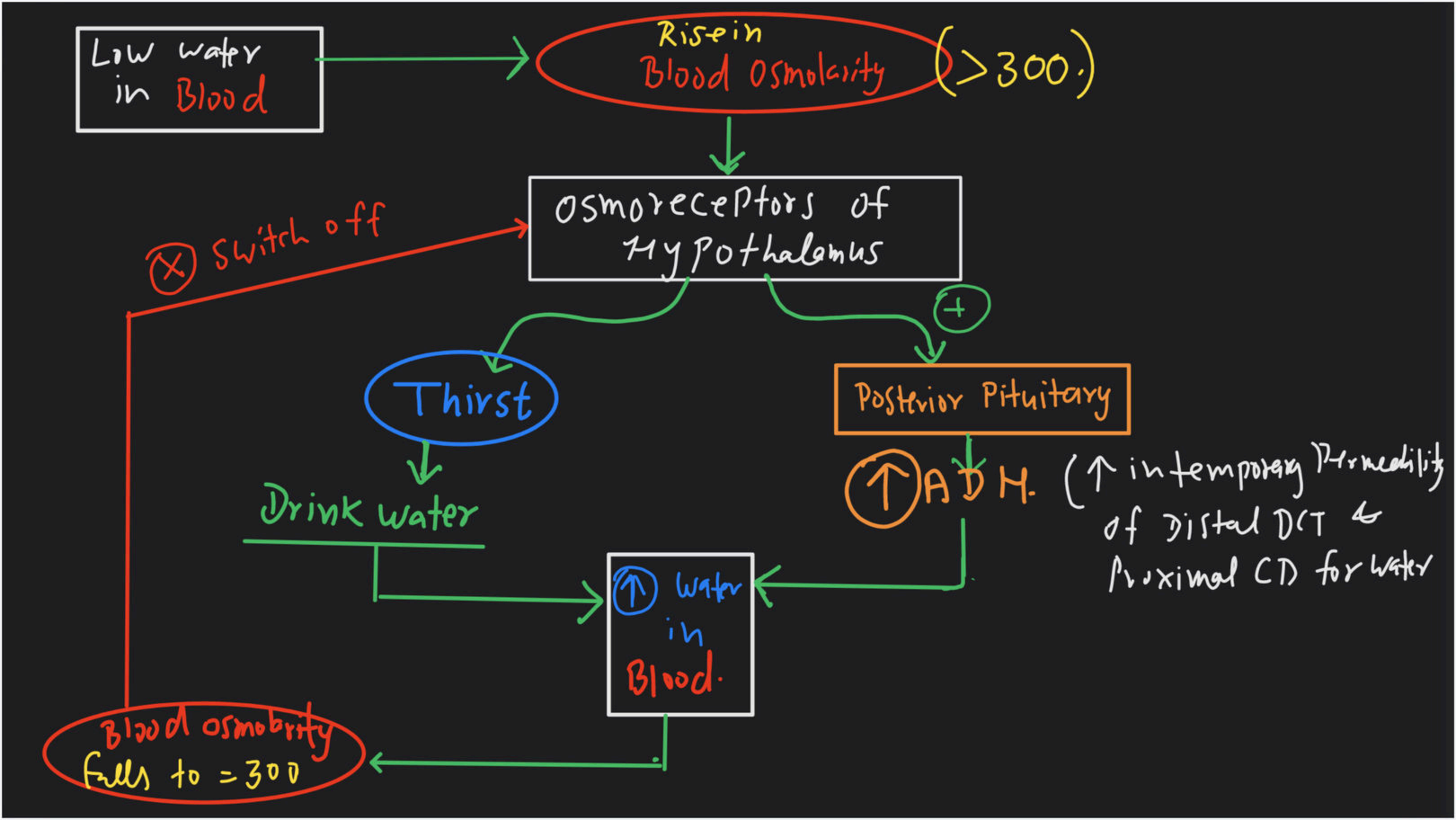
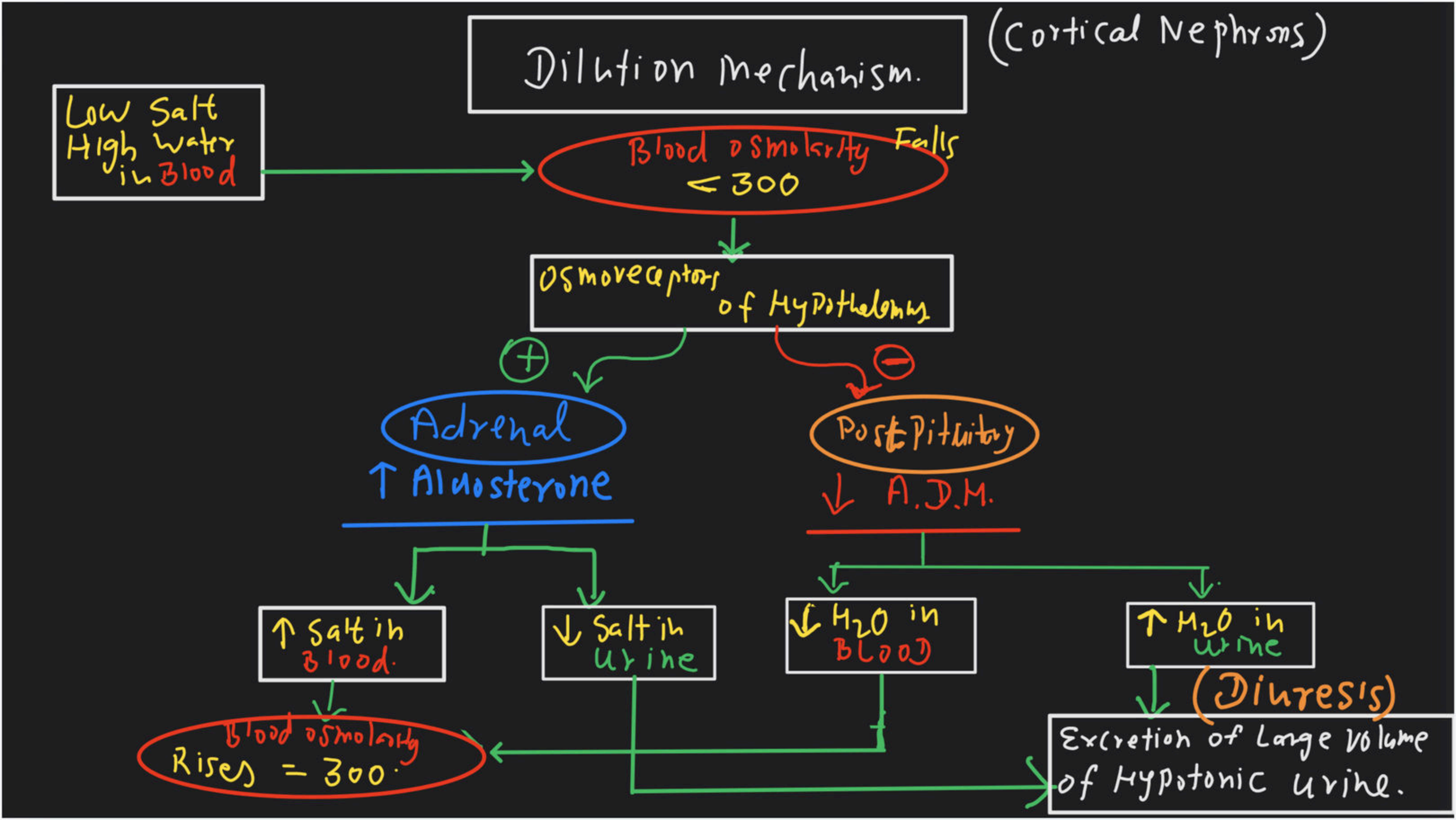
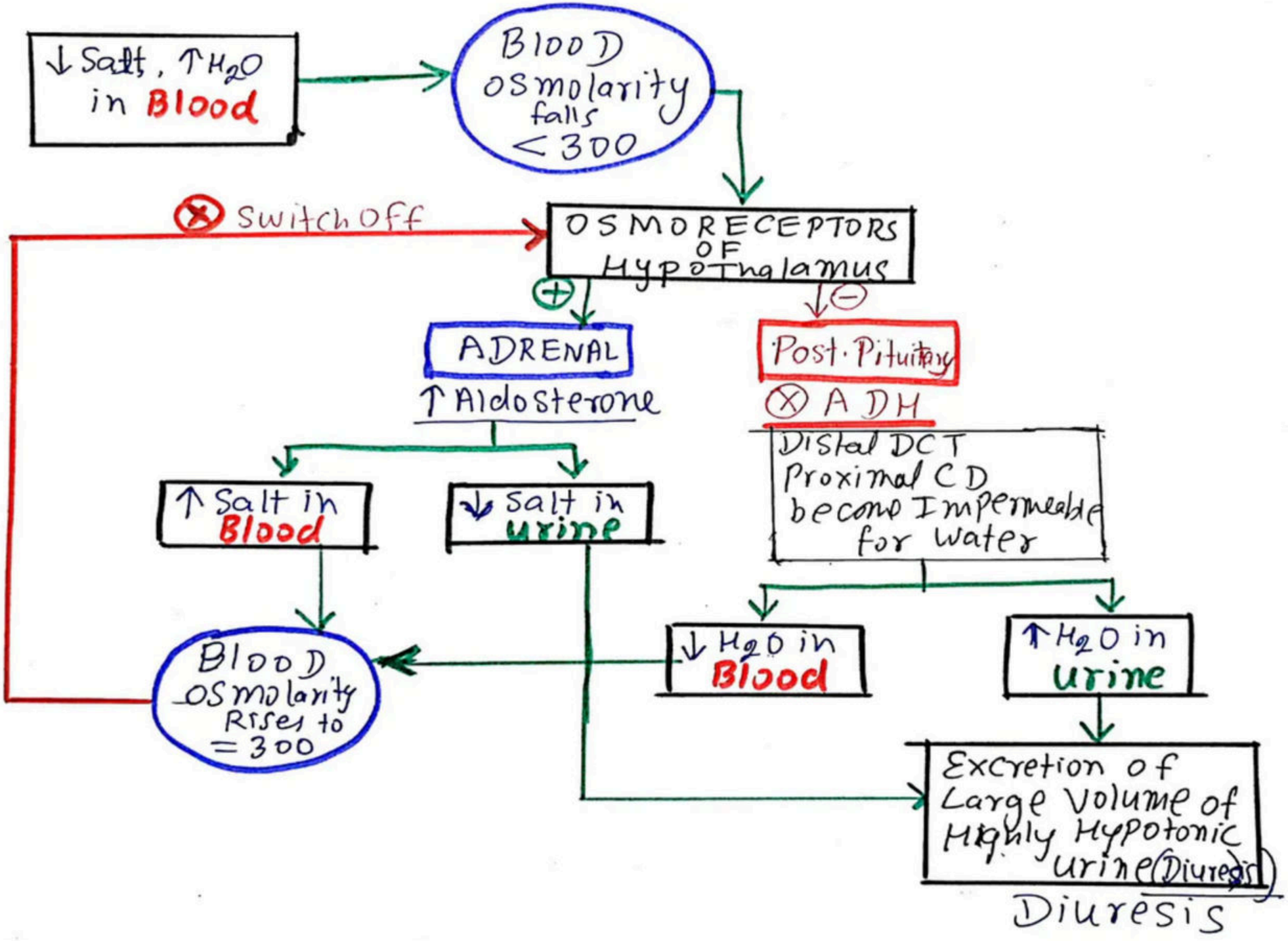
Excretory Products & their Elimination - VI

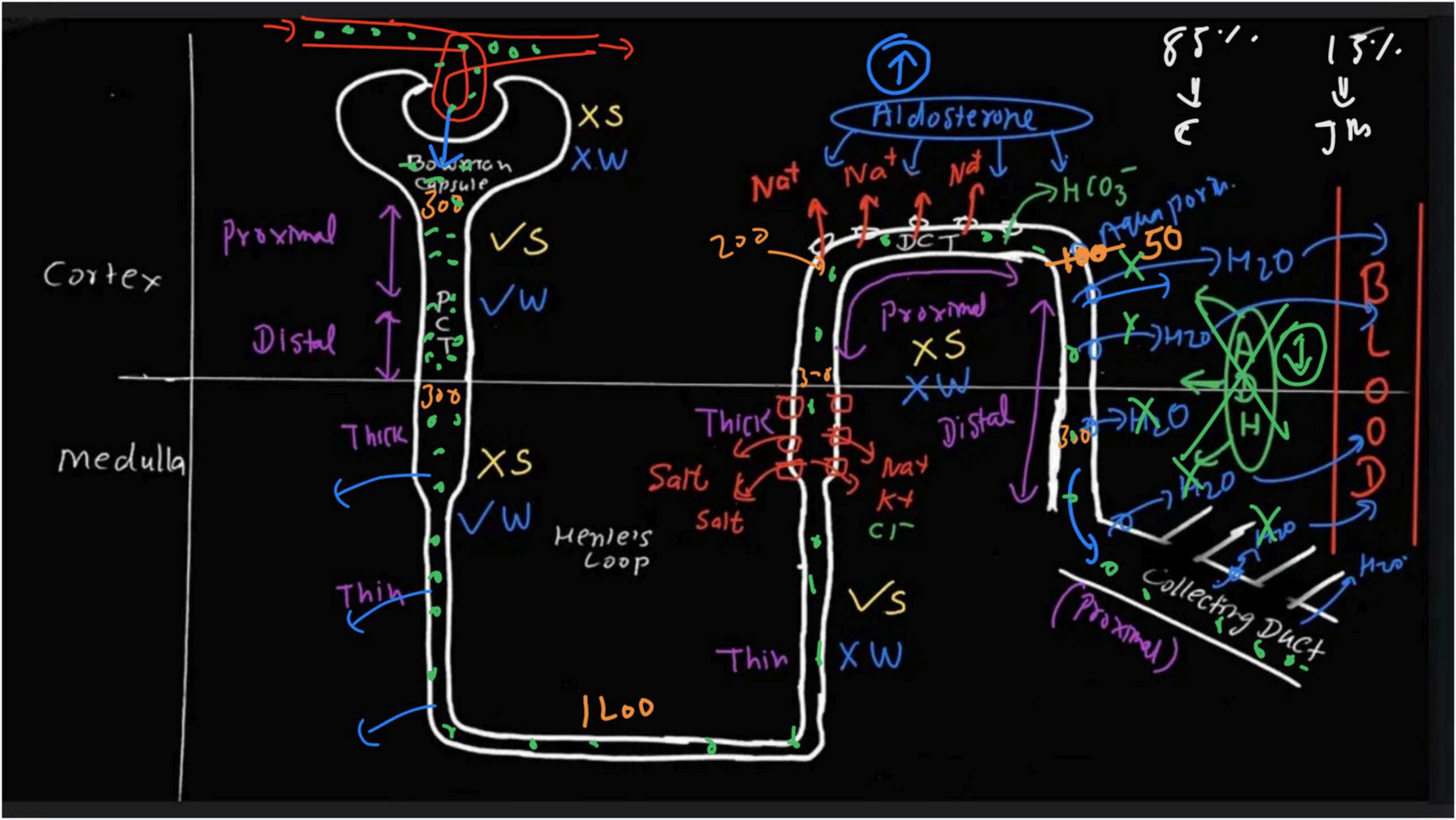
Course on Human Physiology: Excretory Products & their Elimination

Dr Amit Gupta • Lesson 7 • Aug 24, 2021


Low water in Blood
Rise in Blood Osmolarity (>300.)
osmoreceptors of Hypothalamus
Switch off
Thirst
Drink water
Posterior Pituitary
ADH. (↑ in temporary Permeability of Distal DCT & Proximal CD for water
↑ Water in Blood.
Blood osmolarity falls to =300


Dilution mechanism.
(Cortical Nephrons)
Low Salt
High Water
in Blood
Blood osmolarity
< 300
Falls
Osmoreceptors
of Hypothelamus
+
−
Adrenal
↑ Aldosterone
Post Pituitary
↓ A.D.M.
↑ Salt in
Blood.
↓ Salt in
Urine
↓ H2O in
Blood
↑ H2O in
Urine
(Diuresis)
Blood osmolarity
Rises = 300.
Excretion of Large Volume
of Hypotonic Urine.


↓ Salt, ↑ H_2O in Blood
Blood osmolarity falls < 300
Switch off
OSMORECEPTORS OF Hypothalamus
ADRENAL
↑ Aldosterone
↑ Salt in Blood
↓ salt in urine
Blood osmolarity Rises to = 300
Post. Pituitary
ADH
Distal DCT Proximal CD become Impermeable for water
↓ H_2O in Blood
↑ H_2O in urine
Excretion of Large Volume of Highly Hypotonic urine (Diuresis)
Diuresis


Cortex
Medulla
Bowman Capsule
300
XS
XW
Proximal
Distal
PCT
VS
VW
300
Thick
XS
VW
Thin
Henle's Loop
1200
Aldosterone
Na+
Na+
Na+
200
DCT
HCO3−
Proximal
XS
XW
Distal
Thick
Salt
Salt
Na+
K+
Cl−
VS
Thin
XW
Aquaporin
100
50
H2O
300
H2O
H2O
H2O
H2O
A
H
BLOOD
Collecting Duct
(Proximal)
85%
15%

Diabetes Insipidus

from Posterior Pituitary

ADH Secretion Permanently Reduces

- Polyuria
- Polydipsia

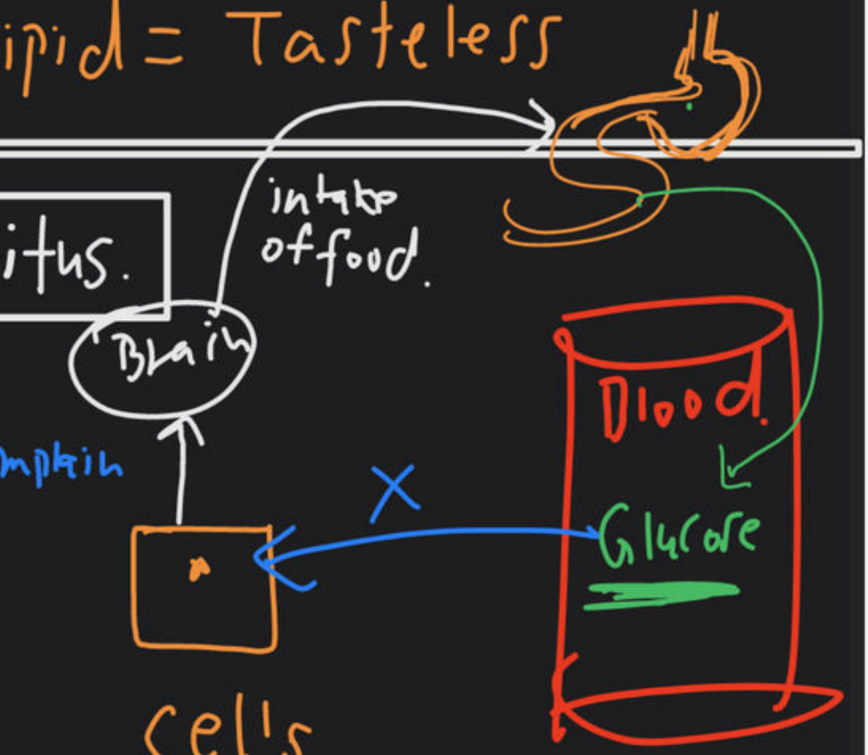
Excretion of very large volume of highly Dilute urine.

insipid = Tasteless

Diabetes Mellitus

- Hyperglycemia
- Polyphagia
- Glycosuria
- Polyuria
- polydipsia

Mellit = Sweet



no insulin from Pancreas

Anti Diuretic Hormone A.D.H. / Vasopressin

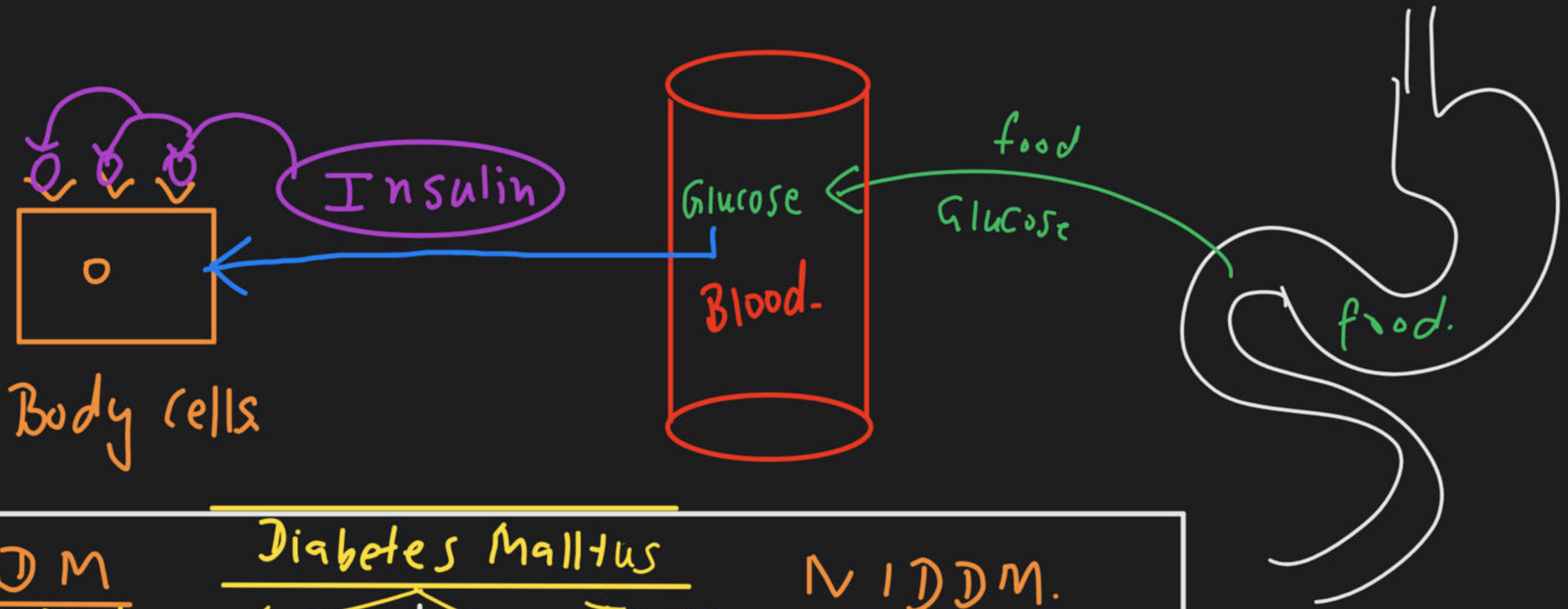
increases the Blood Pressue

Vasconstriction

↑ Blood Volume

Diuretics :- substances that Cause Diuresis by supression of Release of ADH

Eg→ Glucose, mannitol, Alcohol, Caffeine, nicotine, Tea, Cola



Diabetes Mallitus

IDDM
Type I

Bcells of island of Langerhans are Destroyed

R_x → insulin injection.

Eg → Juvenile Diabetes.

NIDDM.
Type-2.

Body cells have lost Sensitivity for insulin

R_x - oral Hypoglycamic

Concentration of Urine