



STAFF NURSE

MEDICAL AND HEALTH SERVICE DEPARTMENT,
MEDICAL EDUCATION & TRAINING DEPARTMENT

UTTAR PRADESH PUBLIC SERVICE COMMISSION

VOLUME – 6

PART – I

**MEDICAL SURGICAL NURSING
(HUMAN BODY SYSTEM & DISORDERS)**



CONTENT

NEUROENDOCRINOLOGY

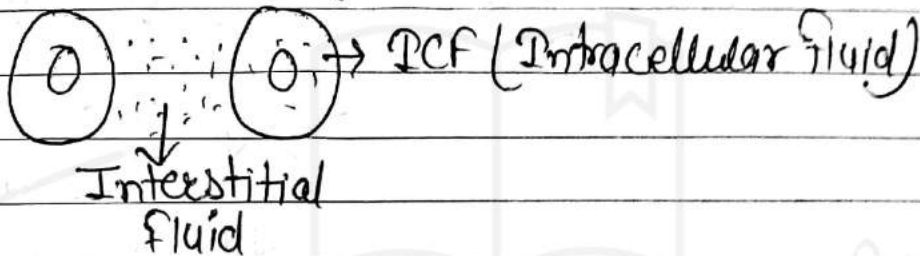
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NEURO-ENDOCRINOLOGY

Homeostasis \Rightarrow Homeo + stasis

\Rightarrow It is the condition of balance or equilibrium of the cells internal environment.



ECF Control \rightarrow internal environment

\Rightarrow Homeostasis is regulated by / maintain by interstitial fluid or extracellular fluid although (अर्थात्) it is located outside the cell

This function is given by Clude Bernard

Regarded \Rightarrow "father of physiology"
as

* Comparison of endocrine and nervous systems \Rightarrow

Endocrine System

Nervous System

① Hormones are through
Control

① Neuro-transmitters
through Control

② wider Coverage

② Narrow Coverage

③ Target organ \Rightarrow far (दूर)

③ Target organ \Rightarrow Near (दूरी)

Glands
 \Downarrow
eg \rightarrow adrenal
gland

Neurons
Smooth &
Skeletal
Muscle

(Medulla)

④ onset of action

④ Onset of action

\Downarrow
slow

\Downarrow
fast

⑤ Duration \Rightarrow Longer

⑤ Duration \Rightarrow shorter

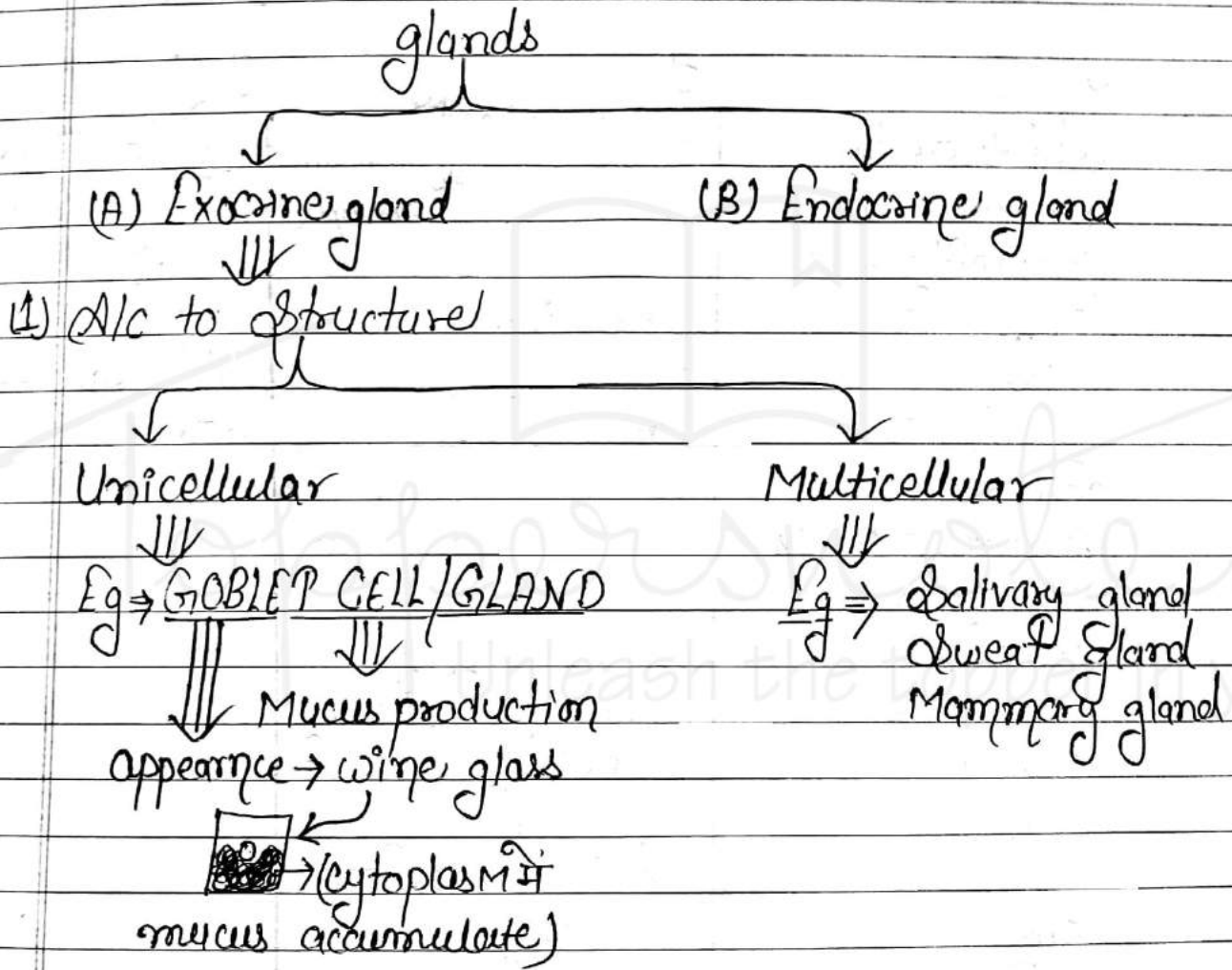
\Downarrow
Because Hormone
circulation में रहेगा
और Target cell तक
पहुंचेगा

\Downarrow
Because neurotransmitter
rapid function करे
गए

Endocrine System

Gland

glands are specialized single or group of cell.
produce hormone and juice



goblet cell
found in => (1) GIT → Stomach में Mucus layer etc etc
(2) Respiration (prevent → HCl में)
Mucus prevent → Moist & stop dust particle
(3) Reproductive/fallopian tube

(2) A/c to function Exocrine gland

(A) Holocrine Exocrine gland

इसमें secretory product whole/ completely रहा है।

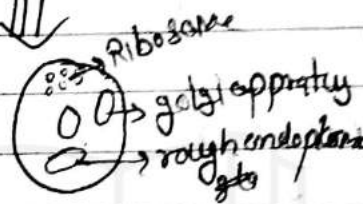
cytoplasm में cell death होने पर secretion product/ release कम हो जाता है।

Eg → sebaceous gland

sebum secretion करती है।

dies cells होने पर यह बाहर निकलती है।

(B) Merocrine Exocrine gland



Eg → salivary gland

saliva का production rough endoplasmic करती है।

saliva का golgi apparatus packing करती है।

छोटे-2 vesicles के रूप में आगे

जो secretion exocytosis के द्वारा बाहर निकलती है।

जो plasma membrane को Break करके बाहर निकलती है।

(C) Apocrine Exocrine gland

cell की apex secretes part है।

apex part deparat ~~करके~~ बाहर निकलती है।

Endocrine System

Endocrine system is consist of :-

- (1) Endocrine gland
- (2) Endocrine organs and tissue

(1) Endocrine gland →
Pure endocrine | Hormonal function

- | | | | | |
|---------------------|------------------|-----------------------------------|-------------------------|--------------------------|
| (A) Pituitary gland | (B) Pineal gland | (C) Thyroid
Lower part of neck | (d) Para thyroid
(4) | (E) Adrenal gland
(2) |
| 3rd - Ectoderm | | | | |

(2) Endocrine Organs and tissue →

Endocrine function \bar{c} Non-endocrine function \bar{c} Both performed.

- | | |
|------------------|----------------------|
| (1) Hypothalamus | (10) Placenta |
| (2) Thymus gland | (11) corpus Luteum |
| (3) Heart | (12) Skin |
| (4) Stomach | (13) Adipose tissues |
| (5) Pancreas | |
| (6) Liver | |
| (7) Kidney | |
| (8) ovaries | |
| (9) Testes | |

(1) Hypothalamus

⇓⇓⇓
(A) Anti-Diuretic Hormone [ADH] / vasopressine/
Arginine vasopressine [AVP]

(B) Oxytocine Hormone

(C) Releasing Hormone (6)



(i) Growth Hormone Releasing Hormone [GHRH]

(ii) prolactin Releasing Hormone [PRH]

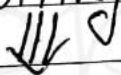
(iii) Corticotropine releasing Hormone [CRH]

(iv) Thyrotropine releasing Hormone [TRH]

(v) Gonadotropine releasing Hormone [GnRH]

(vi) Melanocyte Stimulating Releasing Hormone [MRH]

(D) Inhibiting Hormone



(i) Growth Hormone inhibiting Hormone [GHIH]

(ii) prolactin inhibiting Hormone [PIH]



Bromocriptine drug



Hypothalamus में absorb होकर



PIH Level ↑se



Stop decretion milk

⇒ Hypothalamus is not endocrine gland but Hypothalamus is endocrine organ and tissues

(2) Thymus Gland ⇒ (i) Thyrosine Hormone
 (ii) Thymic Humoral Factor
 (T-Lymphocyte formation)

(3) Heart ⇒ (i) Atrial Natriuretic peptide [ANP]
 (Peptide Hormone) * → Atrial myocyte (Myometrium cell) से Secrete करती है
 (Circulatory & endocrine organ)

Function ANP ⇒ Natriuresis
 ↓ ↓ ↓
 Sodium Urine
 (Na)

Condition develop ⇒ (i) Hypovolemia } Both condition
 (ii) Hyponatremia } B.P. ↓ se.

ANP ⇒ B.P. को ↓ se करती है। जबकि Renine and angiotensine B.P. को ↑ se करती है।

(4) Stomach ⇒ (i) Gastric Hormone
 (Formation by G-cell)

(5) Pancreas ⇒ (i) Insuline
 (ii) Glucagone
 (iii) Somatostatin
 (iv) pancreatic polypeptide

(6) Liver →

- (i) Thrombopoietin, Hormone (TPO) (Thrombocyte production)
- (ii) Insulin like, growth factor - I

(7) Kidney - (i) Erythropoietin Hormone (EPO)
formation of RBC ↑ Se

(8) Ovaries → PER I Hormone

P →

E →

R →

I →

(9) Testes - (i) Testosterone Hormone
(ii) Inhibin Hormone

(10) Placenta - Temporary Endocrine gland

Hormone PERI

HCG

Human Placental Lactogen (HPL)

(11) Corpus Luteum → Progesterone & Estrogen

(12) Skin → (i) vitamin D Hormone
due to sunlight apply → dermis
Substance → Folic acid biotin.

vitamine के precursors में changes

vitamine D - inactive form

Outside the cell

circulation से all organ से होकर Heart में जाने के बाद वहां से बाहर निकल कर

Hydroxylation होता है

Ist → Liver में

IInd → Kidney में

vitamine D - active form

⇒ If person suffers Hepatic or renal problem
person in deficiency vitamin D

(13) Adipose tissue ⇒ Adipose tissue endocrine organ में आता है

Because it secretes leptin (Lipid) Hormone.

Inhibite appetite.

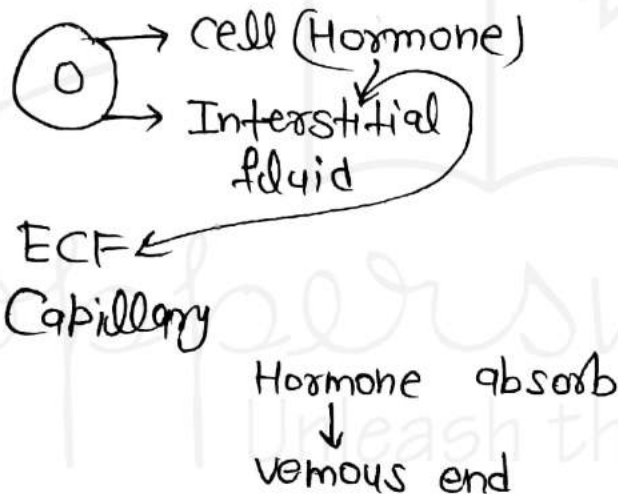
Hormones

Hormones means → to Excite

→ It is a substance of intense biological activity

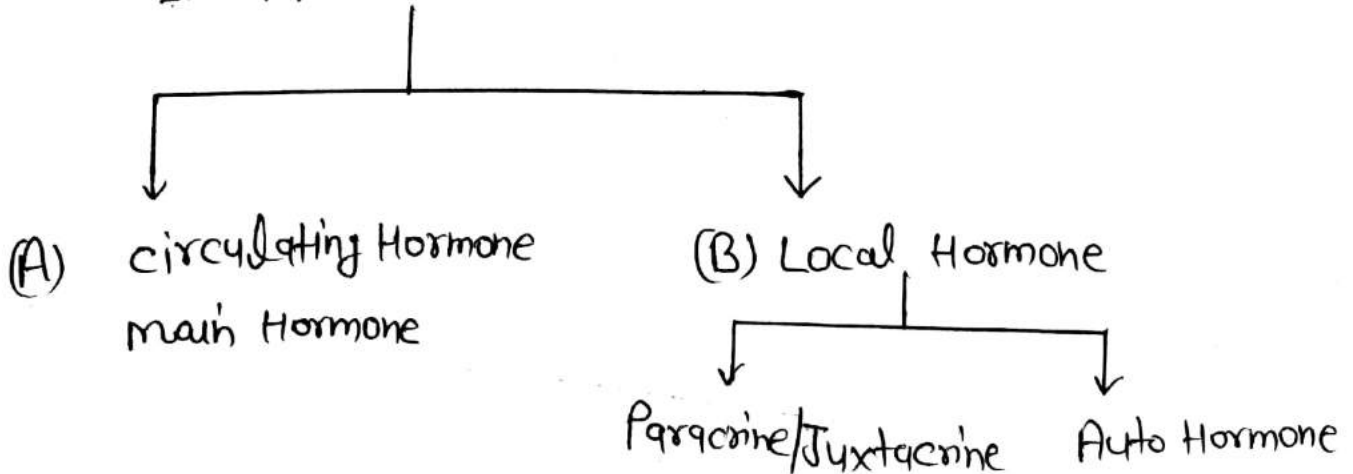
which secreted by endocrinal glandular tissue or organ into the interstitial fluid than into the venous Blood

→ Hormone diffuse in venous blood.

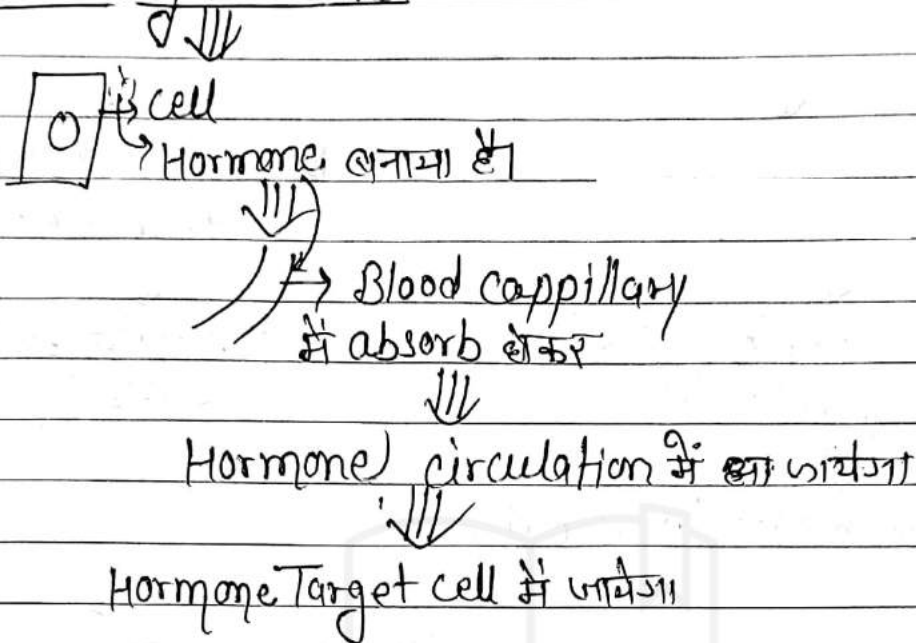


Classification of Hormone

IU A/c to circulation



(A) Circulating Hormone



(B) Local Hormone

(i) paracrine

or
Juxtacrine

ये Hormone पास वाली cell पर action करती है।

(ii) Autocrine Hormone

जो cell ~~secrete~~ Hormone secrete करती है। उसी cell पर action करती है।

Eg of Local Hormone

(1) Interleukin-II ⇒ which released by the Helper T-cell

(2) Prostaglandine

(3) Serotonine → secrete → platelet

(4) Histamine

(2) A/c to chemical Classification of Hormone

(A) Lipid Soluble Hormone



Plasma के water में insoluble है



Soluble in Lipoprotein

(i) Steroid Hormone ⇒ Sterone की ring होती है

(ii) Thyroid Hormone

⇓
T₃

⇓
T₄
(Thyroxine)



- (1) Aldosterone
- (2) Testosterone
- (3) Estrogen
- (4) progesterone
- (5) Corticosterone
- (6) Cortisole
- (7) vitamin D (Cholecalciferol)

(iii) Nitric-oxide gas (NO) ⇒ Secrete

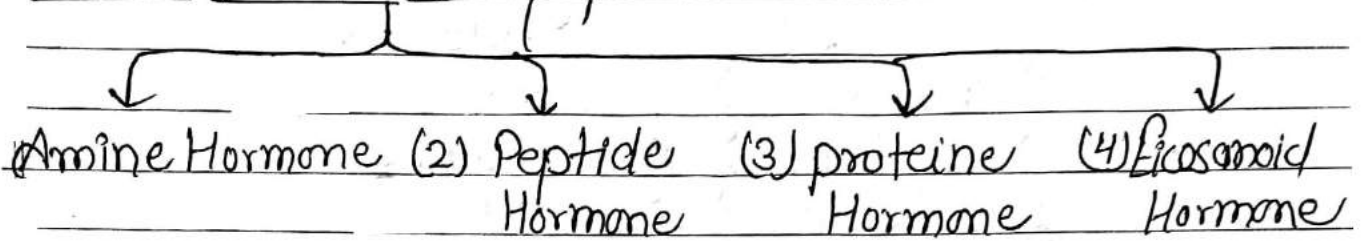


function → vasodilation



- (1) Endothelial of Blood capillary vessels

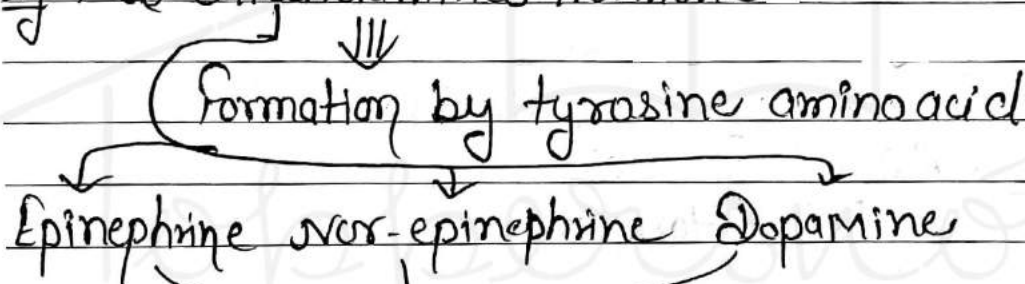
Water-Soluble Hormone



Amine Hormone ⇒

Due to NH_2 (Amino group)

Eg → (a) Catecholamines Hormone



Secrete by → Medulla of adrenal gland

(b) Histamine ⇒

formed by Histidine amino acid

from by Basophil and mast cell

(c) Serotonine and melatonin

formed by ~~try~~ tryptophen amino acid

⇒ Serotonin secrete by



Help

- ① Brain ⇒ Neurotransmitter
- ② platelet ⇒ Blood clotting
- ③ Intestine ⇒ Motility ↑

⇒ Melatonin secrete by



pineal gland

② peptide Hormone



formed by 3-49 amino acid

- Eg → ADH Hormone
Oxytocine Hormone

③ protein Hormone



formed by 50-200 amino acid

- Eg = "4p" → P → Pituitary Hormone
P → parathyroid Hormone (PTH)
P → pancreas
P → placenta (except → estrogen + progesterone)

(4) Eicosanoid Hormone

This is special class of the water soluble which are derived from arachidonic acid.

If insulin [↓] Tab. form में होता है। Tab. stomach में
जाते हैं ही & stomach में pepsinogen destroy करता है।

Note

ADH given usually \Rightarrow injectable

[↓]
avoid orally

[↓]
Sc Route
nasal spray



Toppersnotes
Unleash the topper in you