YAKEEN NEET 2.0

2026

2-4 Ques

Chemical Coordination And Integration

Zoology | Lecture - 01

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Last-chapter

Human Control and Coordination

I Neural Control
- Faster
- Short-lasting

II Chemical Control by Hormones
Endocrine
- Slower
- Long-lasting

Types of Glands - 3 (Details in Struc. Org. chapter)

I Exocrine
- Secretions poured into Ducts

eg: Sweat gland, Salivary glands, Mammary gland

II ENDOCRINE
- Secretions, called Hormones
- Released Into Blood
- Reach distant target Organs
- Duct-less glands

III HETEROCRINE / MIXED / COMPOUND
- Both Exocrine and Endocrine parts

eg: Pancreas → Exocrine (Digestive Juice), Endocrine (Hormones)

Ovaries

Testis

* Human Endocrine Glands

	Number	Origin
1. Pituitary Gland	1	Ectodermal
2. Pineal Gland	1	Ectodermal
3. Thyroid	1	Endodermal
4. Parathyroid	4 (2 pair)	Endodermal
5. Thymus	1	Endodermal
6. Pancreas	1	Endodermal
7. Adrenal Gland	2 (1 Pair)	A. Cortex → Mesodermal; A. medulla → Ectodermal (Ecto-Meso-dermal)
8. Testis (in Males)	2 (1 Pair)	Mesodermal
9. Ovary (in Females)	2 (1 Pair)	Mesodermal

* HORMONES → Non-nutrient chemicals

- present in Trace amount (produced)
- Act as 'Inter-cellular' messanger
- Vary in Chemical nature

Chemical nature of Hormones

I. **Amino-acid derivatives**
1. Melatonin (Pineal Gland) → Tryptophan aa
2. Adrenal Medulla → Adrenaline / Epinephrine, Nor- " / Nor- " → • Tyrosine aa → • Catacholamines

II. **Peptide / Polypeptide / Protein**
- Hypothalamic hormones
- Pituitary hormones
- Thyrocalcitonin / Calcitonin
- Parathyroid Hormone
- Thymosin hormone
- Pancreatic hormone
- Relaxin hormone (Ovary)

III. **Iodinated Hormones**
eg: Thyroid hormone
- T_3 / Tri-iodothyronine
- T_4 / Tetra-iodothyronine = Thyroxine

→ Tyrosine aa + Iodine (I_2)

IV. **Steroidal**
- lipid-like
- Derived lipids

1. Estrogen
2. Progesterone
3. Androgen / Testosterone

(Sex hormones)

4. Adrenal Cortex hormones

* Mechanism of Action of Hormones :

- Each Receptor binds to Only One Hormone, hence Receptors are Specific

I By 2nd messanger

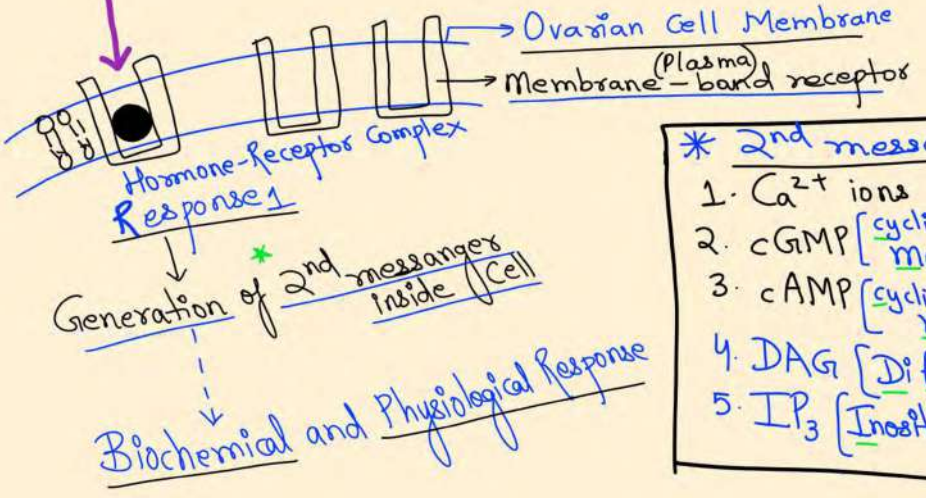
- Amino-acid derivatives and Polypeptides Proteins hormones
- Hormone → Lipid Insoluble
  - Can't Cross Plasma membrane
- Receptors on Cell membrane
  - Membrane-bound receptors
- Quick and Short-lasting effect

II By Binding with DNA or Forming Gene-Hormone Complex

- Iodinated and Steroidal hormones
- Hormones → Lipid Soluble
  - Can Cross PM & Nuclear mb. easily
- Receptors present Inside Cell (Intra-Cellular Receptor)
  - In Cytoplasm or Nucleus (mostly)
- Slower but long-lasting effect

I

FSH (Follicle Stimulating Hormone, from Anterior Pituitary)
→ 1ST messanger

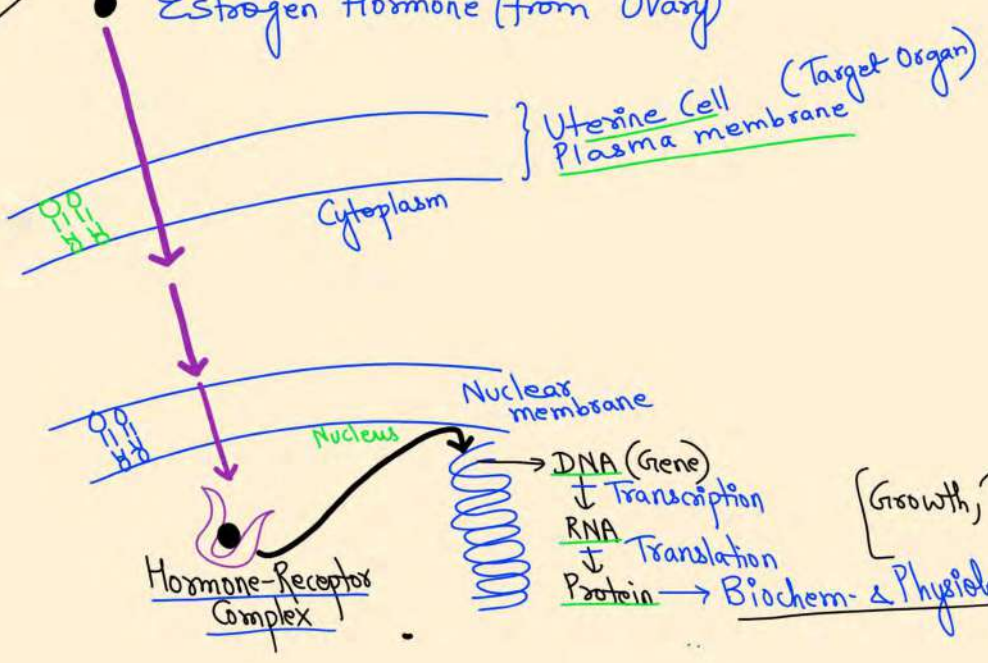


↓
Generation of * 2nd messanger inside Cell
↓
Biochemical and Physiological Response

* 2nd messangers :
1. Ca^{2+} ions
2. cGMP [cyclic Guanosine Mono Phosphate]
3. cAMP [cyclic Adenosine Mono Phosphate]
4. DAG [Di Acyl Glycerol]
5. IP_3 [Inositol Tri Phosphate]

II

Estrogen Hormone (from Ovary)



* HYPOTHALAMUS → present at Basal part of Diencephalon (Forebrain)

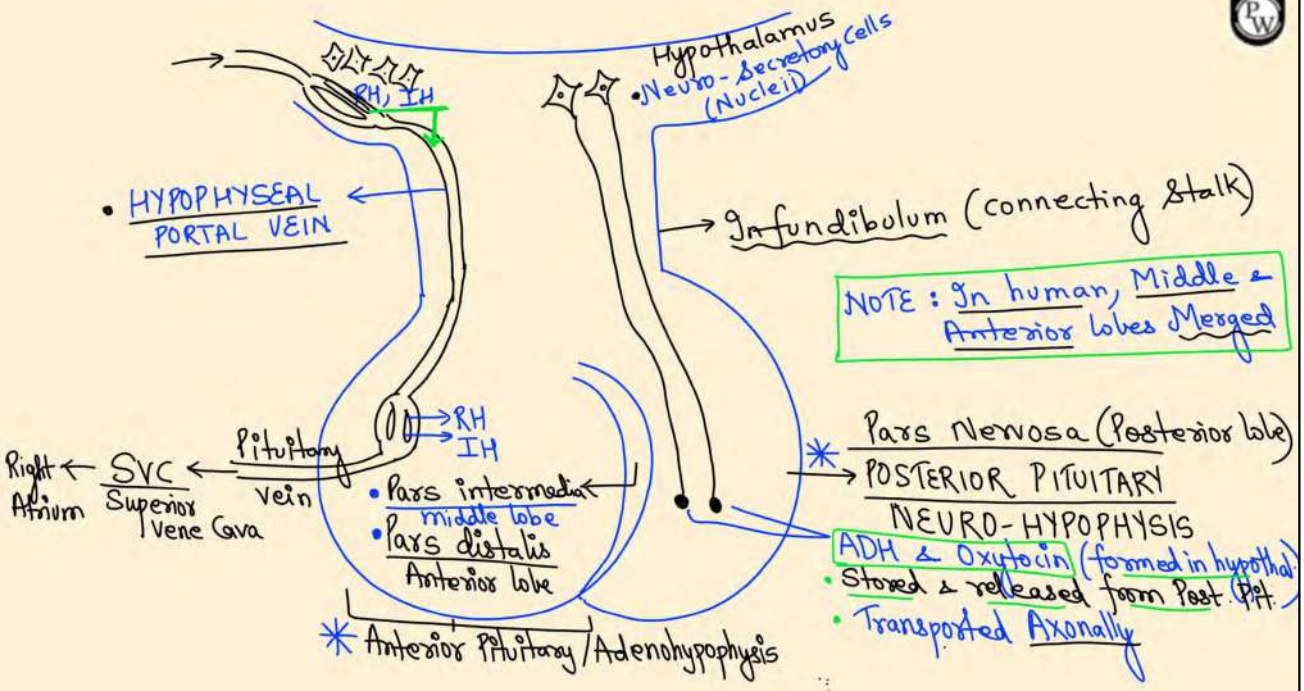
- Master of Master Gland (=Pituitary)
- Connects Neural System with Endocrine System

→ Have a group of neuro-secretory cells 'Nuclei'

a) Secreate Releasing & Inhibitory Hormones → Hypophyseal portal system (vein) → Indirectly Control over Anterior Pituitary

b) Produce 2 Hormones → Stored & Released from Posterior Pituitary
- ADH / Anti-Diuretic Hormone or Vasopressin
- Oxytocin

• Direct Control
• Axonally transport



* Anterior Pituitary Secretes Hormones (7) :

1. Growth Hormone (GH) or Somatotrophic Hormone (STH) → Act on Somatic Cells (Body, Muscles, Bones)
   - → Bone elongation
   - → Physical growth (Overall body growth)
   - → Proteins, Carbohydrate, Fats metabolism
2. Thyroid Stimulating Hormone (TSH) → Act on / Stimulate Thyroid gland → To produce T_3, T_4 Hormones
3. Adreno-Corticotrophin Hormone (ACTH) → Stimulate Adrenal Cortex gland → To produce Glucocorticoids eg: Cortisol
4. Prolactin (PRL) → Act on Mammary gland
   - → Secrete Milk (Lactogenic)
   - → Growth of Mammary gland (Mammotrophic)

5. Follicle Stimulating Hormone (FSH) → Act on Gonads / Sex Organs
- In Female; • Follicle development
- In Male; act on* Sertoli cells and promote Spermiogenesis (Spermatids → Spermatozoa/Sperm)

[Development of Testis & Ovary]

Together, called Gonadotropins / Gonadotrophic Hormone (⇒ Gn)

6. Leutinising Hormone (LH) / Interstitial Cell Stimulating Hormone (ICSH) (in Males) → Act on Gonads
- In Females; • Rupture of Graafian follicle • Release of 2° oocyte (=Ovulation) • Formation & Maintenance of Corpus luteum
- In Males; Act on* Leydig/Interstitial cells (in testis) to secrete Androgens (Testosterone) → alongwith FSH → Spermatogenesis

7. Melanocyte Stimulating Hormone (MSH) → Act on Melanocytes (= Melanin producing cell) In Skin → Regulates Skin pigmentation / Darkens Skin

* NOTE: GH, TSH, ACTH, PRL, FSH, LH : from Anterior Lobe
MSH — from Middle Lobe

Posterior Pituitary Hormones (Only Stored and released from here)

Under Direct Control of Hypothalamus

= Milk Ejection Hormone
= Birth Hormone

(A) ADH / Anti-Diuretic Hormone / Vasopressin
- Vasoconstriction (Narrow Blood vessels)
- Water reabsorption from DCT & Collecting duct, of nephrons in Kidneys → Prevent H_2O loss in Urine → Diuresis

(B) OXYTOCIN (In females)
- Act on Smooth Muscles in Uterus (=Myometrium) → vigorous Contractions → Child birth / delivery / Parturition
- Contraction of Myoepithelial cells in Mammary gland → Milk Ejection / Milk Release

* Hypothalamic Hormones (Total 9) = 6 RH + 3 IH

- Reach from hypothalamus to ~~Anterior~~ Pit. via Hypophyseal Portal Vein

* Releasing Hormones (RH)

- ~~Stimulate Anterior Pituitary to Produce~~

1. GH-RH / STH-RH : GH
2. TSH-RH → TSH
3. ACTH-RH → ACTH
4. PRL-RH → PRL
5. MSH-RH → MSH
6. GnRH → Gonadotropins (FSH & LH)
   - → Gonadotropin Releasing Hormone

* Inhibitory Hormones (IH) Villain

- ~~Inhibit Anterior Pituitary~~

1. MSH-IH (mummy) Not to produce MSH
2. PRL-IH (Papa) " " " PRL
3. STH-IH (GH-IH) (Society) " " " STH / GH
   - called → Somatostatin

* PITUITARY GLAND = Hypophysis

- Master Endocrine gland, as it controls other Endocrine glands like Thyroid, Adrenal cortex, Testis, Ovaries etc.
- Anatomically, divided into 2 parts:

Anterior Pit. | Adenohypophysis (75%)

- Contains Ant. lobe | Pars distalis and Middle lobe | Pars intermedia
- Under Indirect Control of Hypothalamus

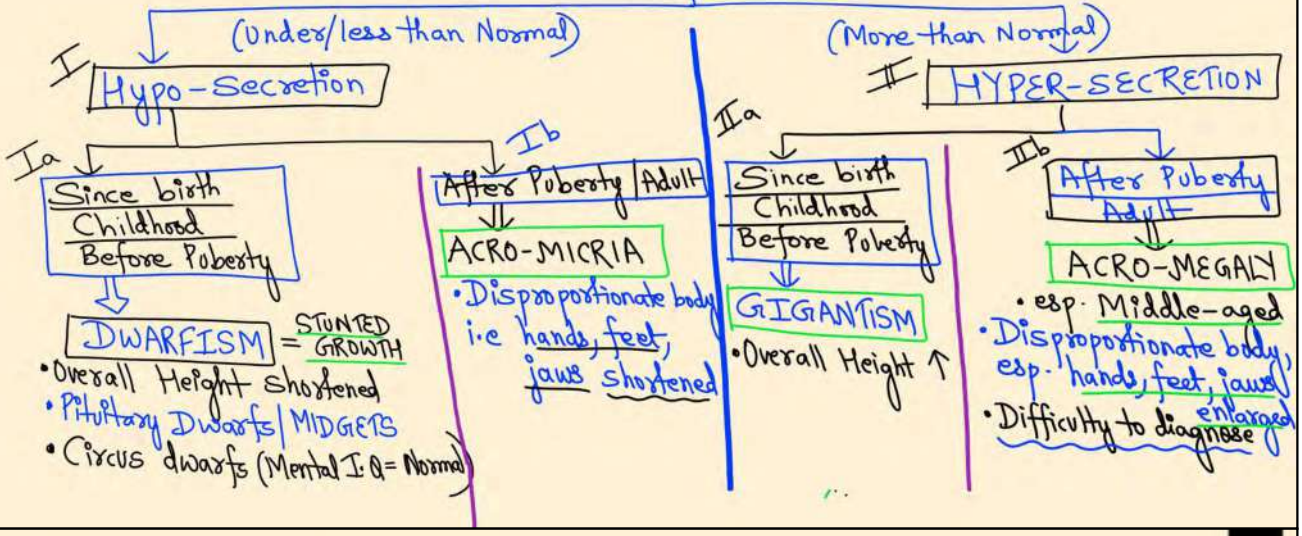
Posterior Pit. | Neurohypophysis (25%)

- Only Post. lobe | Pars nervosa
- Under Direct Control of Hypothalamus
- Called 'Pseudo | False Endocrine gland'

- Single, Ectodermal
- Connected to Hypothalamus, by a stalk (Infundibulum)
- Smallest Endocrine gland
- Present inside bony cavity, called "Sella turcica" (inside Sphenoid bone)

* PITUITARY DISORDERS :-

* Growth Hormone (GH/STH) disorders



• Acromegaly :-

Severe disfigurement, esp. Face → Serious complications → Pre-mature death, if unchecked

* PINEAL GLAND = Epiphysis

- Single, Ectodermal
- Located on Dorsal side of Forebrain [Epithalamus of Diencephalon of Forebrain]
- Secretes MELATONIN Hormone → Tryptophan aminoacid derivative

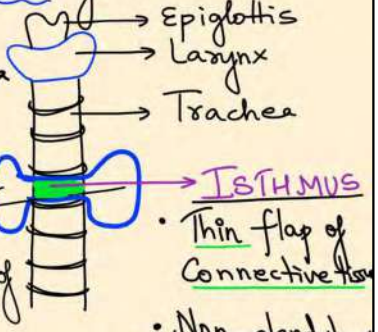
1. Regulation of 24-hr Cycle (diurnal) / Biological Clock / Sleep-awake Cycle
2. Influences Body temp., metabolism, Pigmentation (lightens skin), menstrual cycle and our defence capacity

Out of NCERT
- Antagonistic to MSH (Ant. Pit, darkens skin)
- Melatonin Suppress FSH, LH, Prolactin → delays Puberty
- If ↓↓ Melatonin in childhood → Premature Puberty / Precocious

* Melatonin max. at 12 Midnight

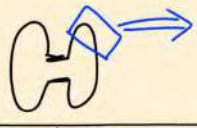
* THYROID GLAND :- Largest Endocrine gland

- Single, Endodermal
- Located on 'Ventral Side' of Trachea
- H or Butterfly – shaped

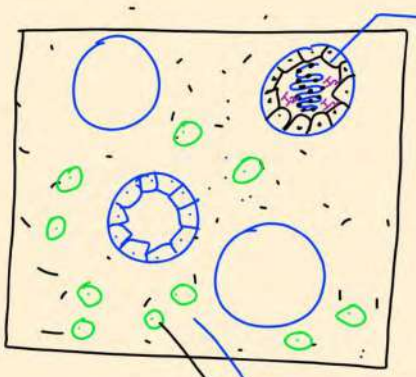


* 2 LOBES
  - On either side of Trachea
  - Glandular part
  - Secretes Hormones

- Thin flap of Connective tissue
- Non-glandular
- Interconnects Both lobes



	T_4	T_3
• half life	More	less
• Potent	less	More



I FOLLICLES

- Follicular cells, enclose Cavity
  - ↳ Simple Cuboidal epithelium
- Secretes T_3, T_4 Hormones
  - T_3: More potent
  - T_4: also called Thyroxine
- Iodine essential for their formation

II (space, outside follicles) STROMAL TISSUE contains;

- Parafollicular Cells (outside follicles)
  - C- cells
    - → Secretes Calcitonin Hormone / ThyroCalcitonin
    - • No Iodine required
    - • Peptide / Protein Hormone

Out of NCERT

* Thyroid Hormones (T_3, T_4) are stored in form of Thyroglobulin in Cavity of follicle

Polypeptide chain with repeating Tyrosine aa

* Functions of Thyroid Hormones (T_3, T_4) :-

1. Physical, Mental and Sexual development
2. Regulates Basal Metabolic Rate (BMR)
3. Controls metabolism of Carbohydrates, Proteins and Fats
4. Support Red Blood Cell (RBC) Formation (= Erythropoiesis)
5. Maintenance of Water and Electrolyte balance
6. Regulate Heart Rate / Respiratory Rate, through BMR
7. Essential for Metamorphosis in Frog

   [Larva (Tadpole) → Adult Frog (Metamorphosis)]

* Function of Calcitonin (Thyrocalcitonin TCT)

- lowers Ca^{2+} levels in blood (Hypocalcemic Hormone) by deposition of Extra Ca^{2+} in Bones OR Excretion through Kidneys
- Antagonistic to Parathyroid Hormone → ↑ Ca^{2+} in blood

V.V.Imp Thyroid disorders (T_3, T_4)

I (Under) HYPOSECRETION → ↓ BMR / ↓ RR / ↓ HR / Cold Intolerance / Weight Gain / lethargy

II (Over) HYPERSECRETION

Ia CRETINISM
- Since birth
  - Congenital
  - Before Puberty
- During Pregnancy
  - ↓
  1. Stunted Growth
  2. Mental retardation
  3. low I.Q
  4. Deaf-Mutism
  5. Abnormal Skin

Ib MYXOEDEMA
- In Adulthood
  - ↓
  - Irregular Menstrual cycles

Ic Simple Goitre / Endemic Goitre / Goitre
- Iodine (I_2) deficient in diet
- Enlargement of Gland

Id HASHIMOTOS Thyroditis
- Autoimmune disorder
  - Antibodies formed against Follicular Cells

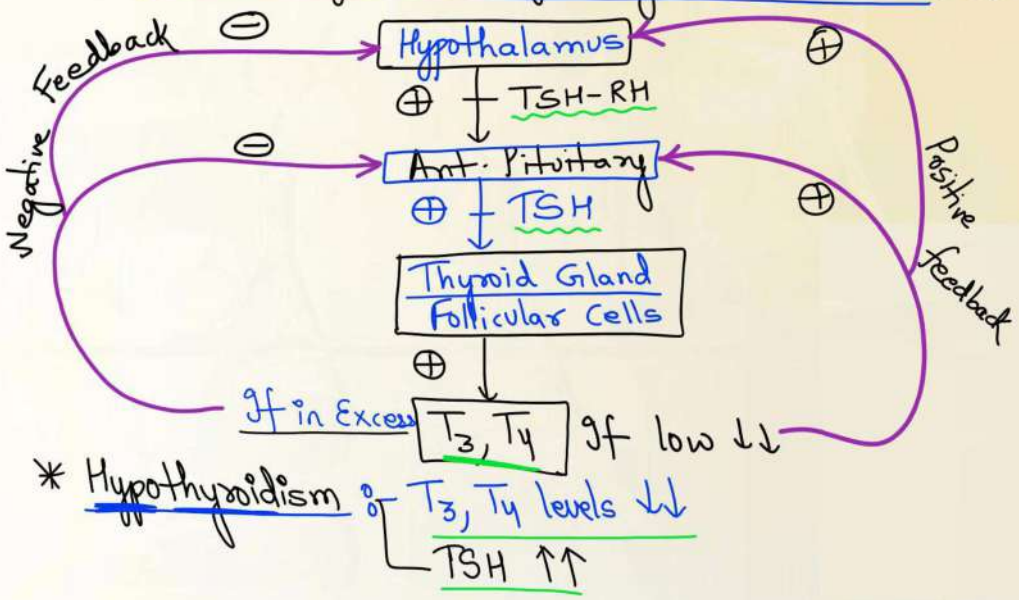
GRAVE'S Disease / EXOPHTHALMIC GOITRE
- Protrusion of Eye ball
- Gland Enlargement
- Cancer / Nodule of Thyroid gland
- ↑ BMR / ↑ HR / ↑ RR
- Heat intolerance
- Weight loss

❖ **Trick for thyroid disorders:**

- Simple - Simple goitre
- Cream - Cretinism
- Mixed with - Myxoedema
- Honey is - Hashimotos disease
- Efficient - Exophthalmic goitre

→ Hypo / Hyper

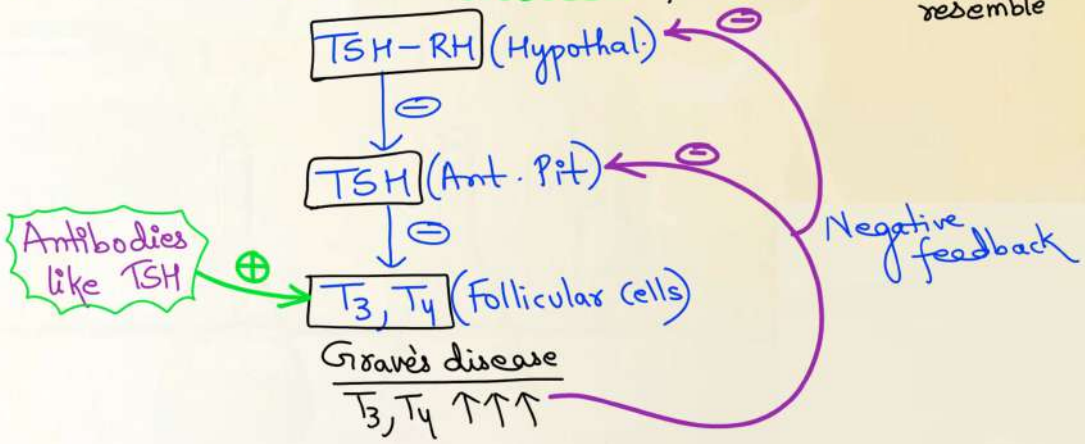
* Control/Regulation of Thyroid Hormones (T_3, T_4)



* Hypothyroidism :- T_3, T_4 levels ↓↓
  TSH ↑↑

Out of NCERT

* Grave's Disease :- Antibodies formed, which mimics / resemble TSH



Grave's disease
T_3, T_4 ↑↑↑

* PARATHYROID GLAND :-

- 4 in no, on Back side of Thyroid gland
- Endodermal
- One pair each, in 2 lobes of Thyroid gland
- Produce Parathyroid Hormone / Parathormone (PTH)
  [Peptide Hormone]

- Dorsal View / Posterior Parathyroid Glands

- PTH → ↑↑ Ca^{2+} in blood (Hypercalcemic hormone)
  - → Antagonistic to TCT (hypocalcemic)
  - → ↑ Blood Ca^{2+} by :-
    a) ↑ / stimulate Ca^{2+} reabsorption from Renal tubules
    b) Act on Bones and stimulate process of Bone resorption (Bone dissolution / demineralisation)
    c) ↑ Ca^{2+} absorbtion from digested food

gmp: PTH Disorders

- Hyposecretion → (Hypocalcemia) → TETANY
- Hypersecretion (↑ PTH, ↓ Estrogen) → OSTEOPOROSIS
  - Hypercalcemia
  - Bones become weak and more prone to fracture

* Calcium Homeostasis

TCT (Thyroid gland, Parafollicular Cells) → ↓ Ca^{2+} in Blood, to Normal Level

I) Hypercalcemia, If > Normal (↑↑)

Blood Calcium Levels (Homeostasis)

II) Hypocalcemia, If < Normal (↓)

↑ Blood Ca^{2+} to normal

PTH (Parathyroid gland)

PTH → formation in Skin, Liver and Kidney (JG cells)

Vit. D → ↑ Ca^{2+} absorbtion from digested food

Artif. Kid Dialysis

* THYMUS GLAND : Plays major role in development of Immune System

- Single, Endodermal
- Lobular structure
- Between both lungs
- Behind Sternum
- Ventral side to Aorta
- Secretes 'Thymosin Hormone' (Peptide)

I differentiation of T-lymphocytes → Cell-mediated Immunity

II Promote production of Antibodies → Humoral Immunity / Antibody-mediated

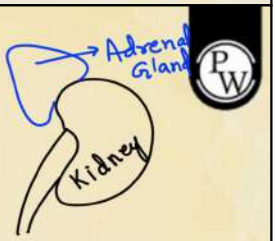
- Thymus gland degenerated in Old individuals (Reason)

↓ production of Thymosin hormone

So, immune responses are Weak in old age (Assertion) (AR)

* ADRENAL GLAND : above Kidney = Supra-renal Gland

- 1 Pair
- At Superior part of Each Kidney
- 2 types of Tissues:



Adrenal Cortex

- Outer part
- 75%
- Mesodermal
- Divided into 3 Zones
- Hormones Called CORTICOIDS [Steroidal]

Adrenal Medulla

- Inner part
- 25%
- Ectodermal in origin
- Hormones called CATECHOLAMINE + Tyrosine aa derivative

Adrenaline / Epinephrine

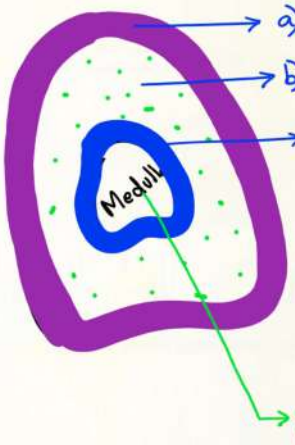
Nor-adrenaline / Nor-epinephrine

* Catecholamines [Sympathetic Autonomic Nervous System]

- Released in response to Stress / Emergency conditions
- called 'Stress hormones' / Hormones of Flight/Fight/Fright (3-F Hormone)

- Functions
  1. Pupillary dilation
  2. ↑ alertness
  3. Sweating
  4. Piloerection (Raising of hair)
  5. ↑ Heart Rate (↑ BP)
  6. ↑ Strength of Ventricular contraction (↑ Stroke Volume)
  7. ↑ Cardiac Output
  8. ↑ Respiratory Rate
  9. Glycogenolysis (Glycogen → Glucose) [Breakdown]
  10. lipolysis, Proteolysis
  11. GLUCONEOGENESIS [Non-Carbohydrate → Glucose]

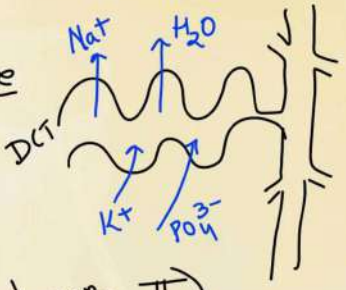
* Adrenal Cortex : divided into 3 Zones



a) Zona Glomerulosa (outer): Mineralocorticoids (Salt Metabolism) eg: Aldosterone
b) Zona Fasciculata (middle): Glucocorticoids (Sugar) eg: Cortisol
c) Zona Reticularis (inner): Sex corticoids eg: Estrogen, DHEA [DiHydroEpiAndro-sterone]
[Secondary Sex characters]

* Adrenal Cortex = 3-S Gland
* Adrenal Gland = 4-S Gland
[A. cortex + A. medulla]
A. cortex → Salt, Sugar, Sex character
A. medulla → Stress

* Mineralocorticoids eg: Aldosterone

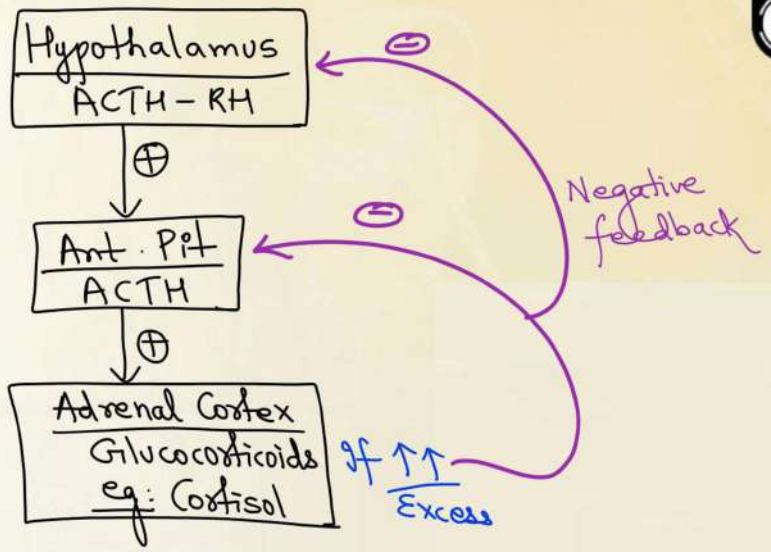


- Reabsorption of Na^+ and Water from Renal tubule (DCT of Nephron)
- ↑ Blood Volume
- ↑ Blood Pressure
- Under control of RAAS (Angiotensin-II)
- Excretion of K^+ and Phosphates
- Role in maintenance of Electrolyte / Salt balance | B.V | B.P | Osmotic balance

* GLUCOCORTICOIDS eg: Cortisol, Under Control of ACTH (Ant. Pituitary)

- ↑ Blood Glucose
- Proteolysis
- Lipolysis
- Gluconeogenesis
- Inhibit Cellular uptake & utilisation of amino-acids
- Maintains functions of Cardiovascular System and Kidney functions

Cortisol
- Stimulate RBC production
- Suppress Immune System (↓ WBC production and activity)
- Anti-Inflammatory



* Sex Corticoids

Role in Secondary sex characters like Axillary hair, Pubic hair, Pitch of voice, facial hair during puberty

Adrenal gland disorders (A. Cortex)

(Under)
HYPOSECRETION

- Under-secretion / Production of Mineralo- and Glucocorticoids (Both)

NCERT
- Alters Carbohydrate metabolism
- Acute Weakness, Fatigue
- ↓ Blood Volume / ↓ Blood Pressure
- ↓ Urinary excretion of K^+ & PO_4^{3-}

⇒ ADDISON'S Disease
NCERT

Not in NCERT PYQ
Hypersecretion
Over-production

ALDOSTERONISM
CONN'S disease
- ↑ Mineralocorticoids
  Aldosterone
- ↑ Na^+ in blood
- ↑ Blood Volume
- ↑ Blood Pressure
- ↓ Blood K^+ & PO_4^{3-}

CUSHING'S Syndrom
- ↑ Glucocorticoids
- ↑ Glucose in Blood
- Central obesity
- Moon-like face
- Buffalo hump

❖ Trick for adrenal gland hormones

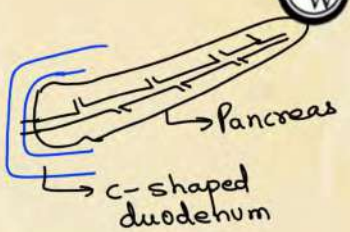
• My	-	Mineralocorticoids
• Gattu's	-	Glomerulosa
• Girl	-	Glucocorticoids
• Friend is	-	Fasciculata
• Shy &	-	Sex corticoids
• Reserved	-	Reticularis
• MAN	-	Medulla, Adrenaline, NA

Out of NCERT PYQ

Sex corticoids :-

- ↑ ♂ Sex corticoids (Androgens / DHEA) in Females : Adrenal virilism
  a) low pitch voice
  b) Male pattern hair on skin (face)
  c) Enlargement in Clitoris
- ↑ ♀ Sex corticoids (Estrogen) in Males : Gynaecomastia
  a) high pitch voice
  b) Enlargement of Breast

* PANCREAS : Single, Endodermal Composite / Heterocrine / Mixed gland



Endocrine part
- called 'Islet of Langerhans' (1-2 million)
- 1-2% part
- Secretes Hormones (Peptide / Protein)
- IOL consists of
  - ∝ (Alpha) cells → 20-25%, Glucagon
  - β (Beta) cells → 65%, Insulin
  - δ (Delta) cells → Somatostatin hormone (Regulate ∝ & β-cells)

Exocrine part
- called ACINI / Acinar part
- Secrete Pancreatic juice (digestive)
- 98-99% part

GLUCAGON
- Secreted by Alpha cells
- ↑ Blood Glucose (Hyperglycemic)
- Mainly acts on Liver Cells / Hepatocytes *
- a) Glycogen —Breakdown / Glycogenolysis→ Glucose
- b) Proteolysis, Lipolysis
- c) Proteins / lipids —Gluconeogenesis→ Glucose
- d) Inhibit cellular uptake & Utilisation of Glucose

INSULIN
- → by Beta-cells
- → ↓ Blood Glucose (Hypoglycemic)
- → Mainly acts on * Hepatocytes & * Adipocytes
- a) Glucose —Glycogenesis→ Glycogen
- b) Glucose —Lipogenesis→ Fats [stored in Adipose Tissue]
- c) Promote / ↑ cellular uptake and Utilisation of Glucose

NOTE: Both Insulin and Glucagon maintain Glucose homeostasis

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* Antagonistic Hormones :- (opposite functions)

1. Glucagon (↑) and Insulin (↓) Blood Glucose
2. Parathyroid Hormone (↑) and Thyrocalcitonin (↓) Blood Ca^{2+}
3. MSH (↑) and Melatonin (↓) Skin pigmentation
4. Aldosterone (↑) and ANF (↓) Blood Na^+ | BV | BP

* Under-Secretion of Insulin (↓↓)

↓

Prolonged Hyperglycemia (↑ Blood Glucose)

↓

Diabetes Mellitus → Honey

- ↑ Blood Glucose (Hyperglycemia)
- Glycosuria (Glucose in Urine)
- Ketonuria (Ketone bodies in Urine)

[Excr. System: Upto 180 mg/dl blood → 100% reabsorb. by PCT]

* Treatment : Insulin injection

AR
- Insulin can't be given orally because it is a peptide hormone and hence degraded in digestive System

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Out of NCERT

Diabetes Mellitus – 2 types

I Type-I DM (IDDM) Insulin Dependent DM

- Early Onset (Young age <20yr)
- Auto-immune disease
- Antibodies formed against β-cells of Pancreas

↓

β-cells damaged

↓

Insulin deficiency

II Type-II DM (NIDDM) Non-Insulin Depend. DM

- Adult Onset
- β-cells Normal → Insulin production normal
- Insulin receptors become insensitive

H.W

* GONADS (Testis and Ovary) [Details in Human Reprod.]

PRIMARY SEX ORGANS

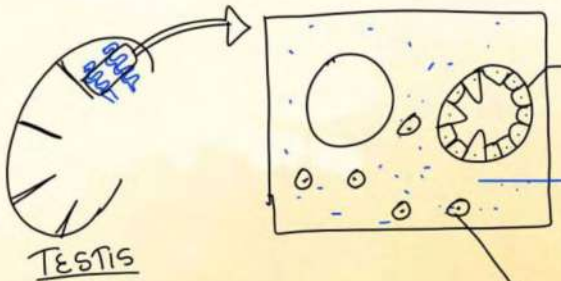
- Mesodermal

* TESTIS : 1 pair, outside abdominal Cavity (Extra-abdo) in a pouch, Scrotum (OO)

↓

Because 2–2.5°C lower temp. than body's temp., required for Sperm formation

Heterocrine gland
- Primary sex organ :- Sperm formation
- Endocrinal :- secrete hormones (Steroid)
  - Group of Sex hormones = Androgens, most common Testosterone



TESTIS

→ Seminiferous tubules (Sperm formation)

→ Interstitial tissue Space / stromal tissue

LH (Ant. Pituitary) ⊕

→ Interstitial Cell / Leydig cell

Secrete → Androgens / Testosterone

* LH = ICSH in Males
Interstitial Cell Stimulating Hormone

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* Functions of Androgens/Testosterone :-

1) Development, maturation and functioning of Male Accessory Sex organs like Epididymis, Vasa deferens, Urethra, Seminal vesicle, prostate etc.

• Sec. Sex characters:
2) Muscular growth
3) Anabolic effects on Proteins & Carbohydrate metabolism
4) Facial and Axillary hair
5) Aggressiveness
6) low pitch of voice
7) Act on CNS and influence Male Sexual behavior (Sex libido)

8. Stimulatory role in Spermatogenesis

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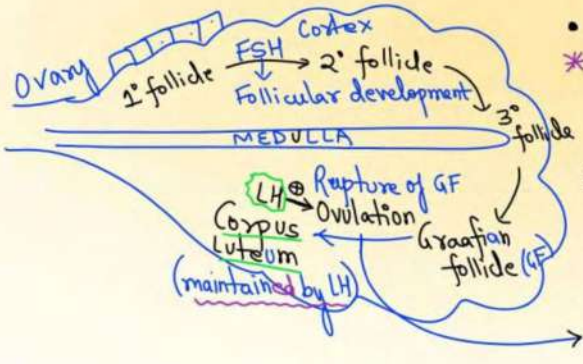
* OVARY : 1 pair, in lower abdomen (Pelvic cavity)

⇓

2 groups of Steroidal hormones
a) Estrogen
b) Progesterone

→ Heterocrine gland
- → Primary sex organ :- Oogenesis (& Gamete formation)
- → Endocrinal : Estrogen, Progesterone



• (Growing Ovarian follicles)
* Follicular Cells / Granulosa cells → Secrete Estrogen, Progesterone

* Corpus Luteum → Secrete (Endocrinal)
- little Estrogen ★
- lot of Progesterone
- Relaxin (later preg.) → Peptide

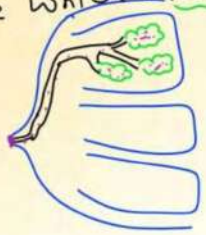
Release of Ova (2° oocyte)

* Functions of Estrogen :-

1. development of ♀ Secondary sex organs
2. development of mammary glands
3. Regular ♀ sexual behaviour (Sex libido)
4. Appearance of ♀ Sec. Sex characters (Pubic hair, high pitch of voice etc)
5. development of growing ovarian follicles (main role – FSH)
6. Control Oogenesis
7. Regulate menstrual Cycle, makes Endometrium of Uterus proliferative (Thickened)

* PROGESTERONE :- (= Pregnancy Hormone)

1. Supports / maintains pregnancy [makes Uterine Endometrium Secretory]
2. Acts on mammary glands and stimulates formation of Alveoli (sac-like structure which store milk) and milk secretion (main role : Prolactin)



* Hormones of Heart, Kidney & Gastro-Intestinal Tract

① Heart : Atrial Natiuretic Factor (Antagonistic to (GIT) Aldosterone)

↑ BP
↓
Secretes ANF
↓
Vasodilator * | Suppress JGA / RAAS *
↓
Nat Excretion in Urine
↓
↓ BV | ↓ BP to Normal

② Kidney : JG-Cells → Renin : Role in RAAS
→ Erythropoietin : Promote RBC formation

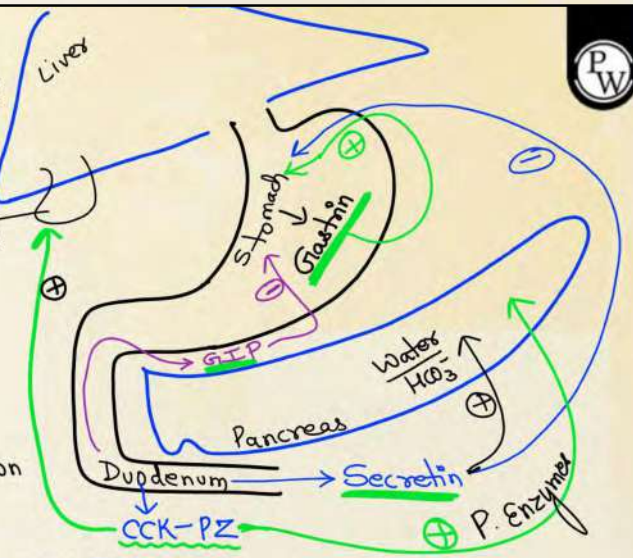
(3) GIT : 4 Peptide Hormones

a) Gastrin
b) Gastric Inhibitory Peptide (GIP) / Enterogasterone
c) Secretin (1ST discovered hormone)
d) Cholecystokinin – Pancreozymin (CCK–PZ)

1. Gastrin → Produced by Stomach (G-cells)
   - → Cause release of Gastric juice (HCl, Pepsino-gen)
   - → ↑ Gastric motility

2. GIP / Entero-gastrone :-
   - Released from Duodenum and ↓ Gastric motility & G. juice Secretion

3. Secretin :- Act like GIP
   - Promote release of HCO_3^- (Bicarbonates) & Water in Pancreatic juice (Exocrine)



4) CCK–PZ → Release Digestive Enzymes in Pancreatic juice
   - GB Contraction to release Stored Bile
   - Stimulate Bile Secretion from liver

Homework from Yakeen Module → Today's 1 pic

* Revise lec-4
* learn lec-5
* DPP
* Read NCERT

* Add in Notes → Gonads (details)

* Sunday → Summary lec.
  → PYQ lec.
* Mon. → Podcast
* Tues → Kattar DPP

THANK YOU