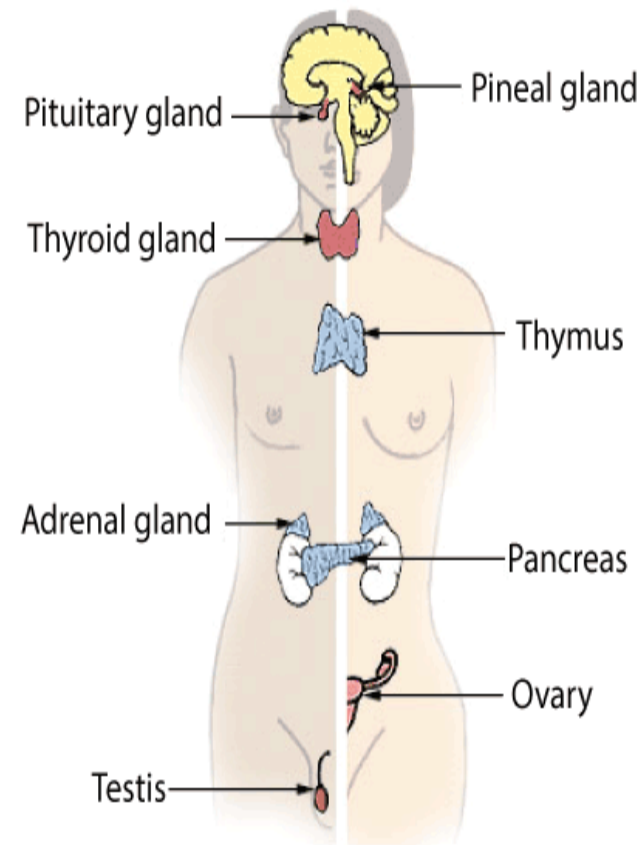




An Initiative by **अमर उजाला**

GLANDS

ENDOCRINE GLANDS



GLANDS:

A gland is an organ which produces and releases substances that perform a specific function in the body.

TYPES OF GLANDS:

1. EXOCRINE GLANDS(DUCT GLANDS): Exocrine glands are glands that secrete substances onto a surface by a duct. It mainly releases Juices and Enzymes.

Eg: Sweat glands, lacrimal (tear) gland, Mammary glands

Salivary gland, liver, Sebaceous (oil) gland, stomach, Small Intestine

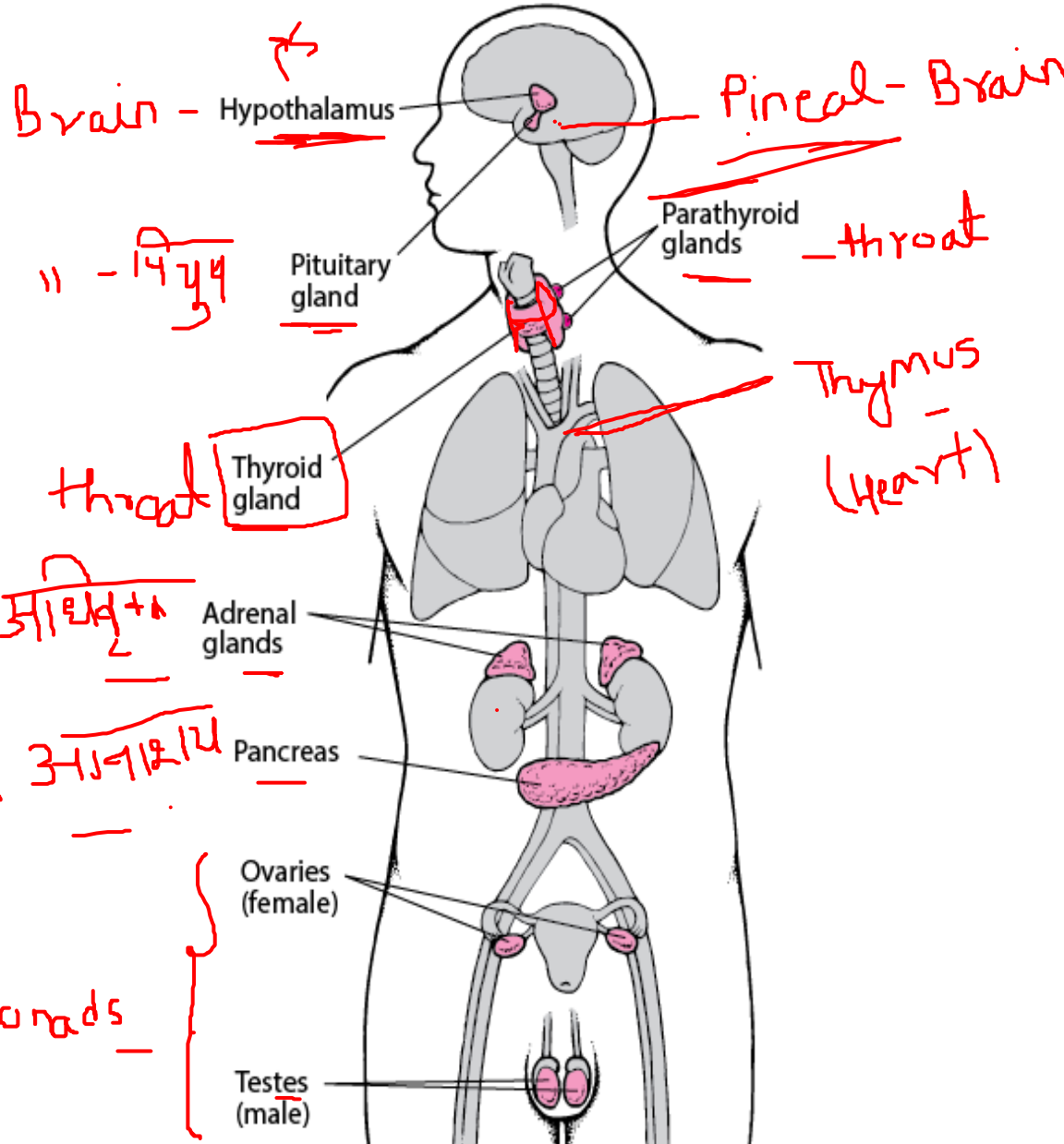
2. ENDOCRINE GLANDS (DUCTLESS GLANDS): Endocrine glands are ductless glands of the endocrine system that secrete their products, hormones, directly into the blood.

NAME AND LOCATION OF ENDOCRINE GLANDS:

Q. smallest gland

Q. Mixed: 3

Pan
Liver
Gonads



abdominal/ stomach
322

int. - Gonads

PINEAL BODY: (Epiphysis) Epiphysis

- Smallest Endocrine gland/Smallest gland.
- Also known as "3rd Eye of our body" / "Biological Clock".

Hormones:

1. Melatonin: It controls our body clock (time table). 21 days

97.1%

It controls our sleep.

Also known as "Hormones of Darkness"

2. Serotonin: Also known as "Feel Good Hormone".

3.1%

Disease:

Deficiency: Insomnia अतिदि

Excess: Irritation, Abnormal Body Clock

Thyroid: Adam's Apple

- Largest Endocrine Gland.
- Also known as "Butterfly Gland".

thyroid → Digest

• Hormone:

1. Thyroxin^{→ 98.1.}: It controls our Metabolism (all the process needed for our life).

Eg: Heartbeat, digestion, Respiration

***"Iodine is important for the formation of Thyroxin"

2. Calcitonin^{2.1.}: Provides rigidity to bones (transports Calcium from blood to bones).

↓
Ca

Blood $\xrightarrow{\text{Calc.}}$ Bone ↑

Disease:

Deficiency: Myxedema (swelling in body, sudden weight gain)----- in adult

Cretinism (in child) बुद्धिहीनता

Excess: Grave's Disease (sudden weight loss, bulging of eyes like frog), Exophthalmic goitre

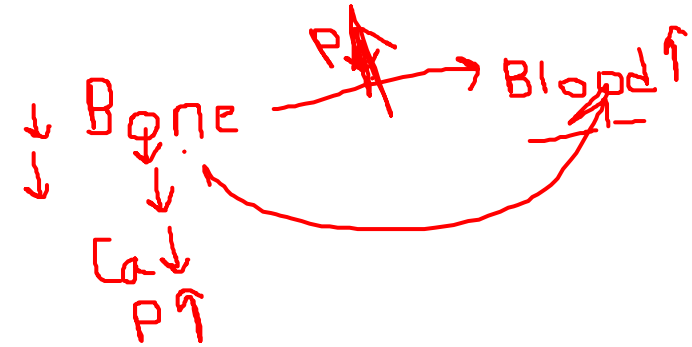
PARATHYROID GLANDS:-

- There are 4 lobes (parts)

Hormone:

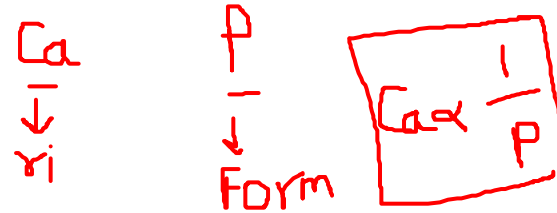
Parathormone (PTH):

- It is also known as "Collip's Hormone".
- It counteract "Calcitonin" (transports Calcium from bones to blood)
- It helps in the formation of bones.*

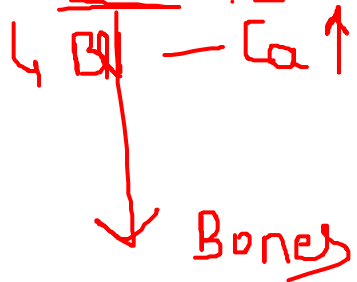


Disease:

Deficiency: Tetany (problem in muscle motion).
 (Handwritten note: \rightarrow Bl. Ca \downarrow)



Excess: Osteoporosis, Stones (Calcium oxalate, CaC_2O_4)



THYMUS: Heart हृदय / Chest Cavity / Circulatory System परिसंचन तंत्र

- Also known as Juvenile Gland. किशोर ग्रंथि
- It provides immunity. प्रतिरोधक क्षमता
- The size of Thymus decreases as the age pass.
- Thymus is most active during the age of 10-15 years (pubic age) किशोरवस्था

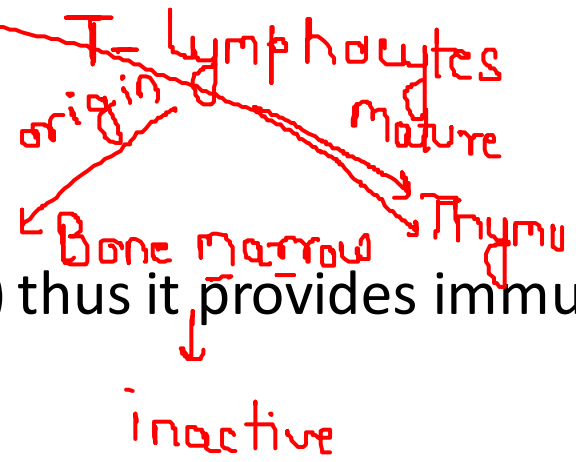
18 yrs
↓
juvenile
किशोरवस्था

Hormone:

Thymosin:

Also known as Juvenile Hormone

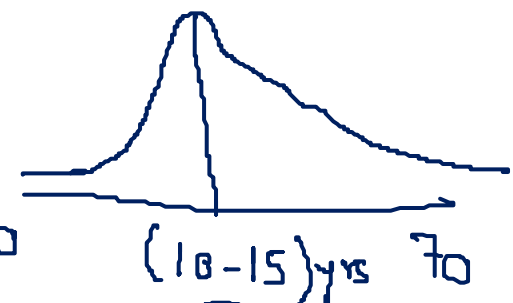
It helps in the activation of WBC (T-Lymphocyte) thus it provides immunity



Disease:

Deficiency: Low immunity (many disease).

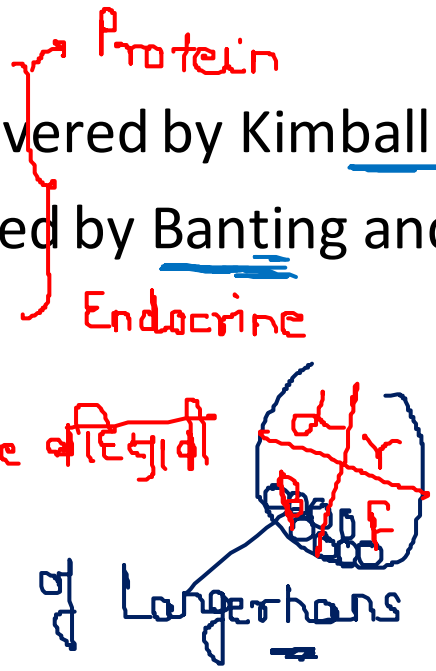
Excess: High immunity (Autoimmunity). ← प्रतिरोधक क्षमता



Secondary Sexual characters द्वितीयक

Pancreas: अग्नाशय → Stomach / Abdominal Cavity उदर गुहा

- Discovered by Langerhans.
- It is a mixed Gland (work as both Exocrine and Endocrine).
- Pancreas is composed of Cell namely "Cell of Langerhans/Islets of Langerhans."
- There are 4 types of Cell in Pancreas:
 1. Alpha Cell: It produces a hormone Glucagon (discovered by Kimball and Murlin). *20%*
 2. Beta Cell: It produces a hormone Insulin (discovered by Banting and Best). *70%*
 3. Gama /Delta Cell - 5% - Somatostatin
 4. F cell: It works as an Exocrine Gland - 5% - Exocrine अतिशय



Function Of Insulin:

It is a protein hormone.

It regulates sugar level in our blood by converting extra sugar into fat.

*** Normal Glucose Level of a Person: (a) Fasting Condition: (60-80)mg%

(80 - 120) mg%

(b) After Meal: (120-140)mg%

(1 hr / 2 hrs)

300mg / 160mg

Disease:

मधुमेह रबीरा

Sugar ↑

Deficiency: Diabetes Mellitus (Type 1 Diabetes)

Excess: Hypoglycemia (low sugar) → Faint

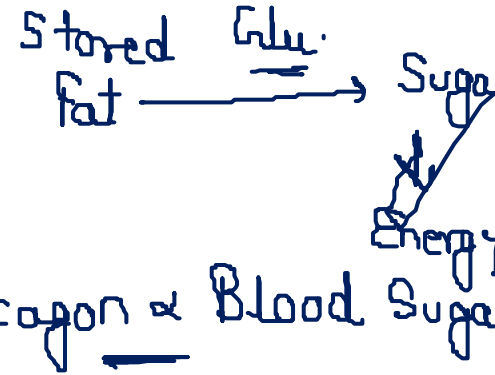
Que: Which mineral खनिज - Zinc → Insulin
Wound healing

Insulin ∝ $\frac{1}{\text{Blood Sugar}}$

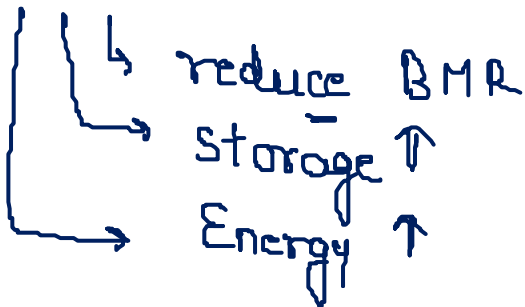
Function of Glucagon:

- It counteracts Insulin संतुलित
- It converts Stored Fat into Sugar/Energy
- It mainly provides Energy in fasting condition व्रत

14 days



⇒ Somatostatin: 5-1.



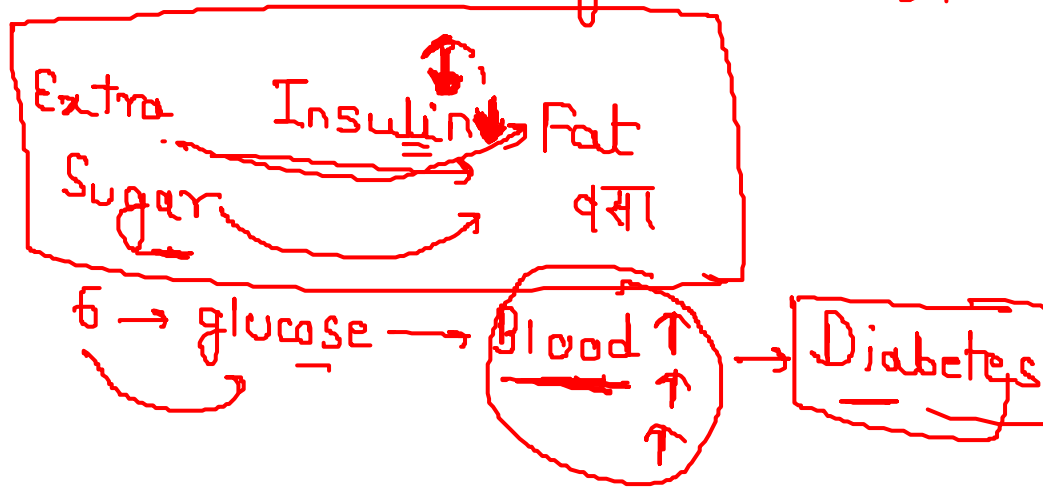
BMR → Basal Metabolic Rate:
आधार अणुचयी दर

200gm → 2hrs
100gm/hr

H.B - 72/min
Resp : (12-20) /min

Hormones → Protein hormone - Protein
Steroid hormone - Fat Eg: Testosterone

(1800-2400) kcal



Adrenal Gland:

- Location: Above the both Kidney.
- Weight: (4-6)gm each
- Known as Emergency Gland/Life Saving Gland/3F gland/ Do or Die Gland

There are 2 parts of Adrenal:

1. Adrenal Medulla: It produces 2 Hormones Adrenaline also known as Epinephrine and Nor Adrenaline also known as Nor Epinephrine

1. Adrenal Cortex: It produces 3 hormones :

a. **GLUCOCORTICOIDS** (Cortisol): It also regulates blood sugar in our body by converting Extra Protein into Sugar.

Regulates Stress (also known as Stress Hormone)

b. **MINERALOCORTICOIDS** (Aldosterone): It regulates Salt level in our body so it helps in the regulation of BP.

It also regulates Water level in our body

*****Aldosterone is proportional to body water.

c. **Sex hormone:** Androgen, Testosterone, Estrogen

- Helps in the development of sexual characters.

Disease:

- Deficiency: Low Sugar, Low BP, Dehydration (Addison's Disease)
- Excess: High Sugar

Depression

Heart Attack/Paralysis/Brain hemorrhage

Cushing Syndrome

Androgenital Syndrome

Gynaecomastia

GONADS (SEXUAL GLAND):

- It is also a mixed gland.
- There are 2 types of Gonads:
 1. **Ovary**: It is a sexual organ in females.

It releases 2 hormones:

- (a) Progesterone
- (b) Estrogen

2. **Testes**: It is a sexual organ in males.

It releases Testosterone.

Function:

- Helps in the development of Secondary Sexual Characters.
- Helps in Reproduction.

Disease: Infertility/Sterility

PITUITARY GLANDS:

- Also known as Master Gland (because it controls other glands).
- Produces maximum number of Hormones (11+2).
- 2nd smallest Endocrine gland.

Hormones:

1. Growth Hormone (GH/ Somatostin):

- It is a Protein Hormone.

Function: (a) Regulates Body Height

(b)Regulates Body Shape

(c) Antiaging Hormone.

Disease:

- Deficiency: Dwarfism
- Excess: Giantism, Acromegaly

2. Oxytocin: It is produced by Hypothalamus but released by Posterior Pituitary.

It is a Peptide Hormone.

Function: (a)Helps in the birth of baby

(b)Love hormone

(c)Milk Hormone: It helps in the release of the milk after pregnancy.

3. Prolactin: It helps in the formation of milk after pregnancy.

4. ADH(Anti Diuretic Hormone/Vasopressin): It is also released by Hypothalamus but released by Posterior Pituitary.

Function: It regulates water level in our body.

HYPOTHALAMUS:

- It is also known as “Super Master Gland”.
- It controls Pituitary Gland.