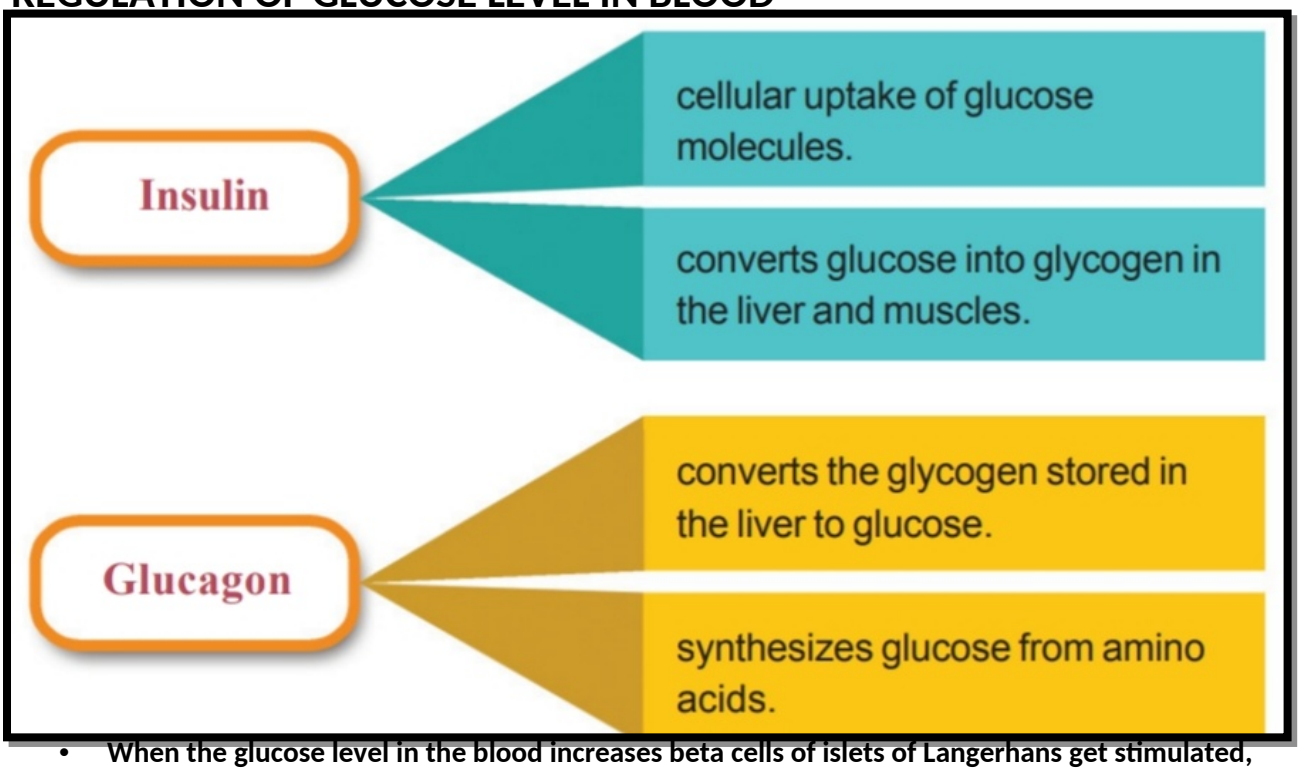
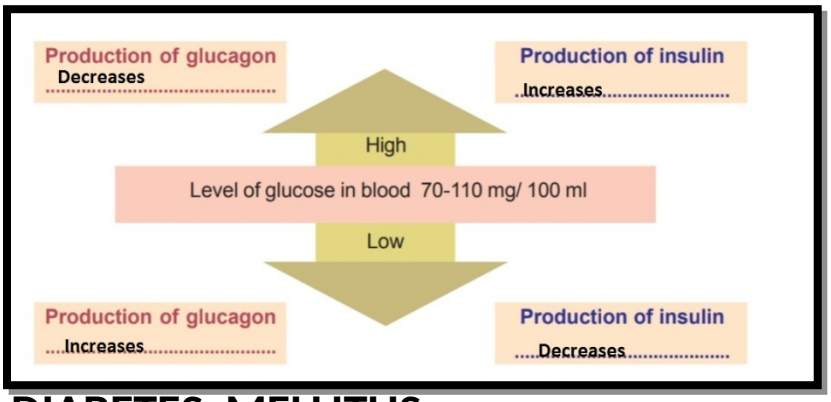
FOCUS POINT

CHEMICAL MESSAGES FOR HOMEOSTASIS

REGULATION OF GLUCOSE LEVEL IN BLOOD



- **When the glucose level in the blood increases beta cells of islets of Langerhans get stimulated, due to which insulin is produced. Insulin reduces the glucose level in blood by the following ways**
- **1) Converts excess glucose in the blood to glycogen and stored in liver and muscles.**
- **2)It enhances the process of absorption of glucose in to the cell from the blood**
- **When glucose level in the blood decreases alpha cells of Islets of Langerhans get stimulated, due to which glucagon is produced. Glucagon increases the glucose level in the blood by following ways**
- **1) By converting glycogen stored in the liver to glucose and return back to blood.**
- **2)By synthesizing glucose from amino acids and return back to blood normal ie,70-110mg/100ml blood**
- **In this way by the combined action of both insulin and glucagon the level of glucose in the blood maintained as 70-110mg/100ml blood**



DIABETES MELLITUS

- **Diabetes is clinically referred to as a condition when the level of glucose before breakfast is above 126mg/100ml blood.**

CAUSES

- **1) Decreased production of insulin due to the destruction of beta cells.**
- **2)The inability of cells to utilize the insulin produced**

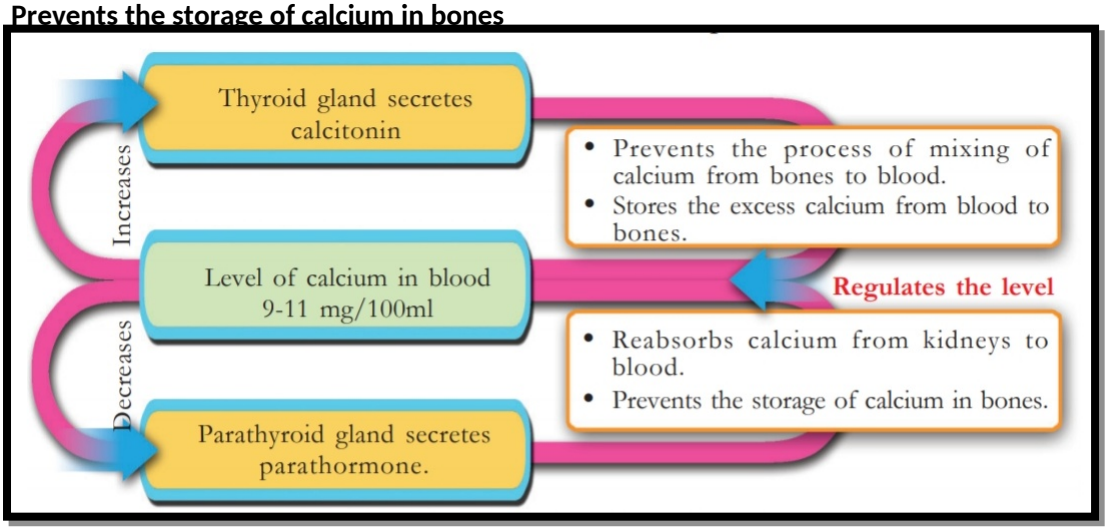
SYMPTOMS

- **1) Increased appetite and thirst.**
- **2) frequent urination**

REGULATION OF LEVEL OF CALCIUM IN BLOOD

- **The normal level of calcium in blood is 9-11mg/100ml.**
- **Calcitonin and parathormone are the two hormones, maintains the level of calcium in blood.**
  When calcium level of blood increases thyroid gland secrets calcitonin, it decreases the calcium in blood by the following ways
  a) Prevent the process of mixing of calcium from bones to blood
  b) Stores the excess calcium from blood to bones
  When calcium level of blood decrease parathyroid gland secrets parathormone, it increases the calcium in blood by the following ways

a) **Reabsorbs calcium from kidneys to blood**
b) **Prevents the storage of calcium in bones**



GIGANTISM, DWARFISM AND ACROMEGALY

DEFECT	CAUSES	SYMPTOM
Gigantism	Production of somatotropin increases during growth phase	Excessive growth of the body
Dwarfism	Production of somatotropin decreases during growth phase	Stunted growth and the victim become dwarf
Acromegaly	Excessive production of somatotropin after the growth phase	Growth of bones on the face, jaws and fingers

PHEROMONES

Chemical substances that are secreted by certain animals to the surroundings to facilitate communication are called pheromones.

EXAMPLES

1) **The muscone in the musk deer**
2) **The civeton in the civet cat**
3) **Bombykol in the female silk worm moth.**

SITUATIONS OF PHEROMON ACTION

1) **Movement of ants in a line along a particular trail.**
2) **Honey bees and termites live in colonies**

IMPORTANCE OF PHEROMONES

1) **Help in attracting mates.**
2) **Informing the availability of food.**
3) **Determining the path of travel.**
4) **Signalling danger**
5) **Artificial pheromones are used for pest control in agriculture fields**

PLANT HORMONES

Chemical substances produced by the plant that control and co ordinate the life activities in plant are called plant hormones.
Since they mainly control the growth activities of plant they are called plant growth regulators

PLANT HORMONES AND THEIR FUNCTIONS

PLANT HORMONES	FUNCTIONS
Auxin	➢ Cell growth ➢ Cell elongation ➢ Promoting the growth of terminal

	buds ➢ **Fruit formation**
Cytokinin	➢ **Cell growth** ➢ **Cell division** ➢ **Cell differentiation**
Gibberellin	➢ **Stimulate the breakdown of stored food to facilitate seed germination** ➢ **Sprouting of leaves**
Abscisic acid	➢ **Dormancy of embryo** ➢ **Dropping of ripened leaves and fruits**
Ethylene(Only the gaseous hormone)	➢ **Ripening of leaves and fruits** ➢ **Excess amount of ethylene causes dropping of leaves and fruits**

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