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CH: # SKIN

Intro:- • Largest organ of our body
• Skin makes up about 16% of body weight.
• It covers an area 1.5 to 2 m^2.
• It plays a crucial role in protecting internal structures, regulating temperature and providing sensory information.
• It is not a uniformly thick. At some place it is thick and some place it is thin.
• It's average thickness is 1-2 mm.
• Thickness is more in sclap and interscapular region which is about 5 mm.
• In other areas of the body/skin is thinnest over eyelids and penis which is nearly about 0.5 mm.

LAYERS OF SKIN:-

- Epidermis (outermost)
- Dermis (Innerlayer)

Epidermis:- • Superficial layer of the skin.
• It composed keratinized, stratified

- and squamous epithelium.
- It does not have any blood vessels (avascular)
- There is five layers of thick skin.
- It is the outermost layer.
- Nutrition is provided to epidermis by the capillaries of dermis.

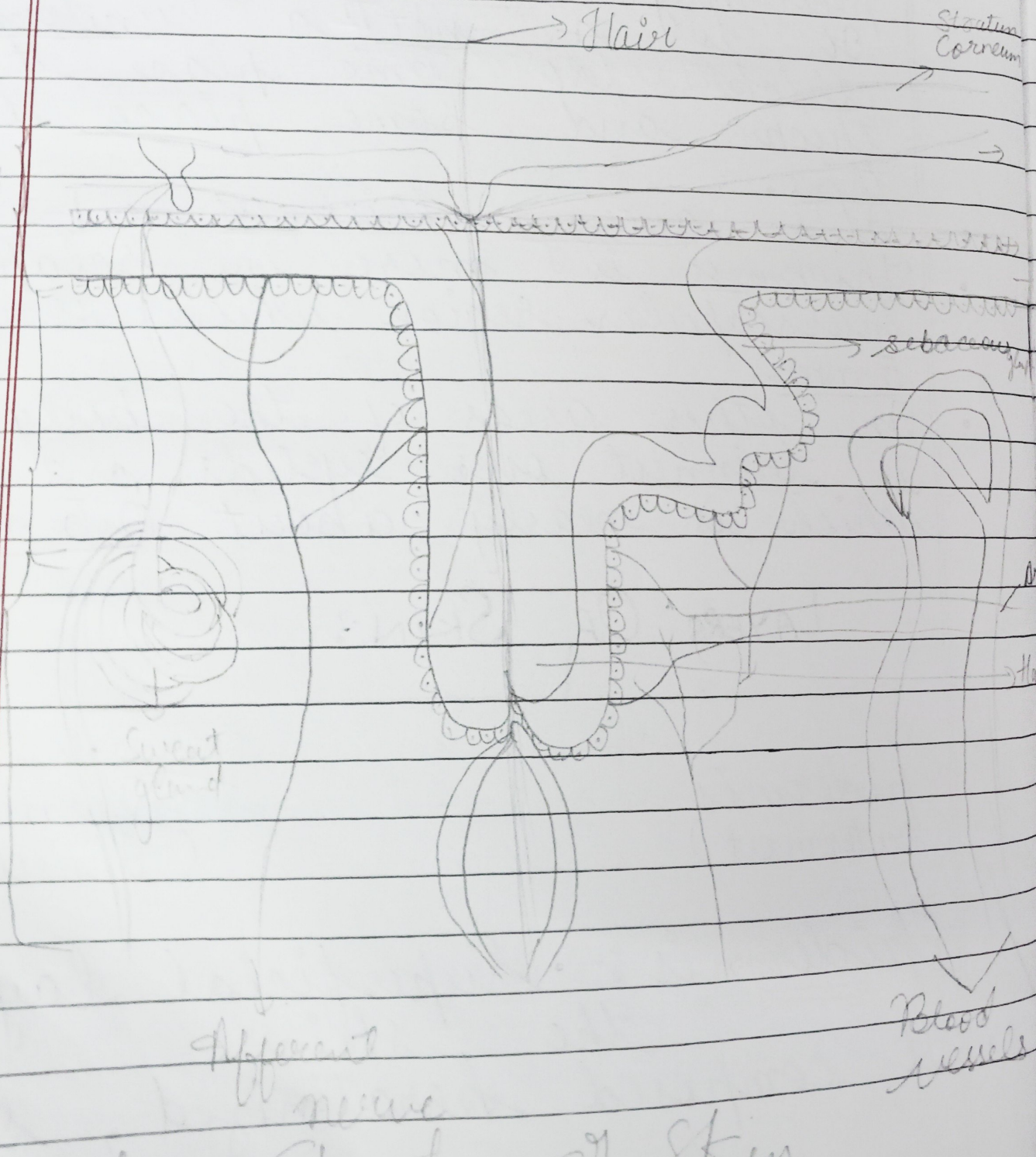
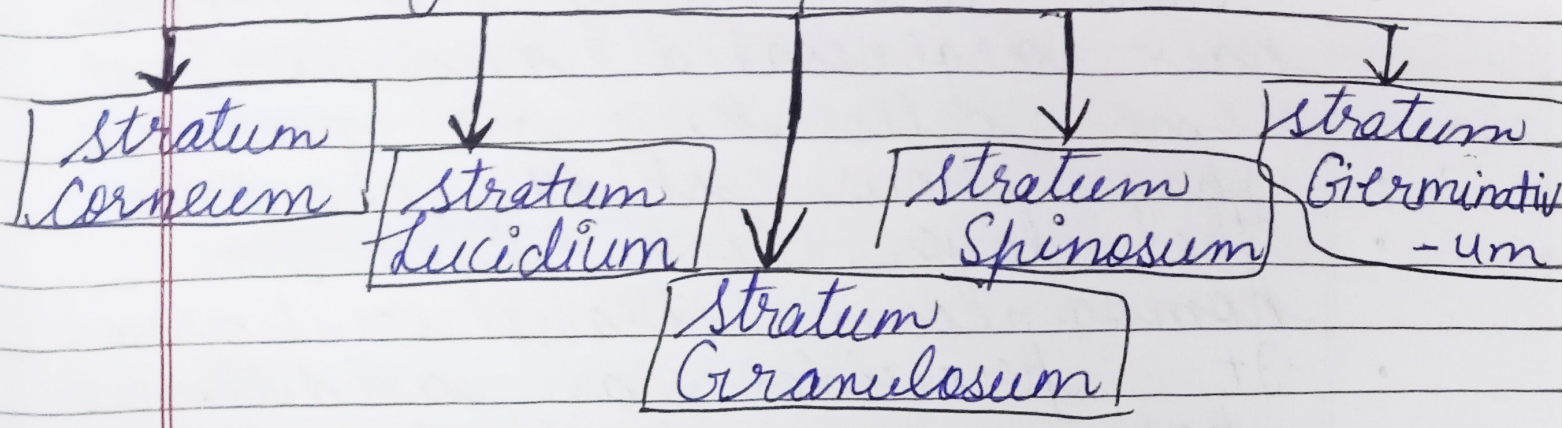


Fig: Structure of Skin

Layers of Epidermis



→ Stratum Corneum :- (Hormy Layer)

- It is the outermost layer and consist dead cells which are called Corneocytes. These cells lose their nucleus due to pressure and become dead cells.
- This cells also called Phospholipids and glycogen.
- It act as a barrier against pathogens, chemicals and water loss.
- It contains keratin, a protein that helps provide strength.
- It protects the underlying tissues and maintaining skin integrity.

→ Stratum Lucidium :-

- Stratum Lucidium is made up

flattened epithelial cells.
- There are many cell which have degenerated nucleus and some cells have no nucleus.
- They show shiny character.
- The layer look like a homogeneous translucent zone.
- It provides an additional barrier against friction, wear, microbial invasion.

→ Stratum Granulosum :-

- This layer typically consists of 3 to 5 layers of flattened keratinocytes that are in the process of dying.
- This cells are flat and rhomboid in shape.
- Lamellar granules release lipids that form a waterproof barr
- This layer marks the transi b/w the living and dead cells in the Epidermis.

ka keratohyalin :- It is a granu material composed mainly of proteins which help aggregate keratin fibers within skin cells leading to formation of

→ Stratum Spinosum :- (Prickle cell layer)

- This layer is also called Prickle cell layer because the cell appear to have tiny spines viewed under a microscope. These spines are actually desmosome.
- It composed several layers of living keratinocytes.
- It provide strength & flexibility to skin.
- It helps to maintain cell to - cell adhesion.
- It plays a role in immune defense through the presence of Langerhans cells.

→ Stratum Germinativum :-

- It is a thick layer.
- This layer is made up of polygonal cells, superficially & columnar or cuboidal epithetical cell in deeper part
- New cells are constantly formed by mitotic division.
- Newly formed cells move continously towards to the stratum corneum.
- A stem cells which give ris
- cells are called Kerat

- Melanocytes produce pigment called Melanin. The colour of skin ~~skin~~ depend upon Melanin.
- From this layers, some projections called 'rete ridges'. These projection provide nutritional function.

Dermis :-

- It is the inner layer of the skin.
- It is made up of connective tissue and matrix contains collagen & elastic fibres.
- Collagen fiber exhibit elastic property and are capable of storing or holding the water.
- Collagen fibers contains the enzymes collagenase which is responsible for wound healing.
- It contains ; Blood vessels, lymph vessels, sensory nerve ending, sweat glands and their ducts, hairs and sebaceous glands.

Layers Of Dermis

- Papillary
- Reticular

→ Superficial Papillary Layer :-

- A superficial Papillary layer projects into the epidermis.
- It contains blood vessels, lymphatic and nerve fibers.
- This layer also have some pigment containing cells called Chromatophores.
- Dermis papillal are finger like projection arising from the superfics papillary dermis.
- Each papillary contains plexus of capallaries and lymphatics which are oriented perpendicular to skin surface.

→ Reticular Layr :-

- This is a deeper and thicker layer.
- It is made up of dense irregular connective tissue.
- These fibers are found around the hair bulbs, sweat glands and sebaceous glands.
- In dermis subcutaneous tissue is present which loose connect tissue which connect the skin with the internal struc of the body.

- It serves as an insulator to protect the body from excessive heat and cold environment.

Appendages of the Skin :-

Skin appendages also called skin derivation or accessory structures. These appendages assist in various functions such as protection, temperature regulation & sensation.

Major appendages are :-

- Hair
- Nails
- Sebaceous Glands
- Sweat Glands
- Ceruminous Glands
- Mammary Glands.

Colour Of Skin :-

- The pigment melanin produced by specialized cells called Melanocytes in the epidermis (outer layer of skin), is mainly responsible for skin colour.

- There are two main types of Melanin:-

Eumelanin	Pheomelanin
It is a dark brown or black pigment.	It is red or yellow pigment.

- The amount and type of melanin produced by melanocytes determine the overall colour of skin.
After synthesis the pigment spreads to the cell of the other layers.

Hemoglobin in Blood :-

Amount and nature of hemoglobin that circulates in the cutaneous blood vessels play an important role in coloration of skin.
Skin becomes :-

- Pale, when hemoglobin content
- Pink, when blood rushes to skin d to vasodilation (blushing).
- Bluish during cyanosis whi caused by excess amount of reduced hemoglobin.

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Functions Of Skin :-

Skin forms the covering of all the organs for the body and protects these organs from the following factors :-

- Bacteria and toxic substance
- Mechanical Blow
- Ultraviolet Rays.

Protection from Bacteria & Toxic substance :-

- Skin covers the organs of the body and protects the organs from having direct contact with external environment.
- Lysozyme secreted in skin destroys the bacteria.
- Keratinized stratum corneum of epidermis is responsible for the protective function of Skin.
- If the skin injured, infection occurs due to invasion of bacteria from external environment.

During injury or infection,

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Keratinocytes secrete :-

(a) Cytokines like interleukin, α = tumor necrosis factor and γ interferon which play important role in inflammation, immunological reactions, tissue repair and wound healing.
(b) Antimicrobial peptides like β - defens which prevent invasion of microbes.

Protection from Mechanical Blow :-

- Skin is not tightly placed over the underlying organs or tissues.
- The mechanical impact of any blow to the skin is not transmitted to the underlying tissue.

Protection from Ultraviolet Rays :-

- Skin protects the body from ultraviolet rays of sunlight.
- Exposure to sunlight or to any other source of UV rays increases the production of

melanin pigment in skin.
- Melanin absorbs UV rays.
- At the same time, the thickness of stratum corneum increases.

Sensory Function :-

- Skin is considered as the largest sense organ in the body.
- It has many nerve endings which form the specialized cutaneous receptors.
- These receptors are stimulated by sensations of touch, pain pressure or temperature sensation.
- These sensation to convey to the brain via afferent nerves.

Storage Function :-

- Skin stores fat, water, chloride and sugar.
- It can also store blood by the dilatation of the cutaneous blood vessels.

Synthetic Function :-

- Vitamin D_3 is synthesized in skin by the action of ultraviolet rays from sunlight on cholesterol.

Regulation of water & Electrolyte Balance :-

- Skin regulates water balance and electrolyte balance by excreting water and salts through sweat.

Excretory function :-

- Skin excretes small quantities of waste materials like urea, salts and fatty substances.

Absorptive Function :-

- Skin absorbs fat-soluble substances and some ointments

Secretory Function :-

- Skin secretes sweat through sweat glands and sebum through sebaceous gland.
- Sebum keeps the skin smooth & moist.