

→* Integumentary System →*

structure and function of skin →

Introduction → The skin is the largest organ of the human body.

It covers the entire outer surface of the body and protects the internal organs from the external environment. It plays important roles regulation, and synthesis of Vitamin D.

layer of skin

The skin consist of the following three primary layers.

- Epidermis (Outer layer)
- Dermis (Middle layer)
- Hypodermis (Deepest layer)

Epidermis → It is the outermost layer of the skin.

✓ It is composed of stratified squamous epithelial cells.

✓ The epidermis is avascular (contains no blood vessels).

It act as the first line of defence against microorganism, UV radiation and mechanical injury.

✓ Melanocytes, found in this layer produce melanin, the pigment responsible for skin colour.

This layer is constantly renewed through cell division in the Stratum basale.

Sub Layer epidermis (from the top to bottom)

Stratum corneum → Outermost layer of dead, keratinized cells.

Stratum lucidum → Present only in thick skin (palms and soles)

Stratum granulosum → Where cells start to die and ~~keratin~~ Keratin forms

Stratum spinosum → Strengthens skin with desmosomal connections.

Stratum basale → Deepest layer with stem cell for regeneration

→*← Dermis →*←

The Dermis is the Second (Middle) layer of ; located beneath the epidermis and above the hypodermis.

Dermis present b/w the epidermis (top layer) and the Hypodermis (Bottom layer)

- ✓ It is thicker than the epidermis and made of connective tissue.
- ✓ It gives strength, flexibility, and support to the skin.
- ✓ It also contains blood vessels, nerves, hair roots, and skin glands.

Layer of Dermis

They are classified into two types →

1) Papillary layer

2) Reticular layer

3) Papillary layer → This is the upper layer, just below the epidermis.

It contains small blood vessels (capillaries) and touch receptor (Meissner's corpuscles)

✓ It help in nourishing the epidemic and
Sensing soft touch.

(II) Reticular layer → This is the deeper
+ and thicker layer of
dermis.

It is made of collagen and elastin fibers
which make the skin strong and
stretchy.

It Contains :-

✓ Sweat glands

✓ Oil (Sebaceous) glands

✓ Hair follicles

Nerve ending (For pain, pressure, temperature)

✓ Lymph Vessels and blood vessels

Function of Dermis

Give strength and shape to the skin
Helps in sensation (like touch, pain, Heat,
Cold)

Supplier Oxygen and Nutrients → to support skin.

Regulate body temp → with Help of blood vessels

Stores H₂O and protects → inner Organs

Support glands and Hair roots.

→* Hypodermis →*

Introduction → The hypodermis, also known as the subcutaneous layer or superficial fascia is the deepest layer of the skin, lying beneath the dermis and above the muscles or bones.

It is primarily composed of adipose tissue, with blood vessels and nerves.

The Hypodermis can be divided into the following key components:

Adipose Tissue → This is the main constituent of the Hypodermis, consisting of fat cells that store energy and provide insulation, and cushion underlying organs.

The Amount of fat by individual and body region.

Loose Connective Tissue → Collagen and elastin fibers make the tissue flexible and elastic. These fibers provide structural support independently from underlying muscles and bones.

3. Blood Vessels → Large Blood vessels run through the Hypodermis, supplying oxygen and nutrients to the skin and aiding in temperature regulation.

4. Nerve Ending → Sensory receptors in the Hypodermis detect sensation like pressure, pain, and temperature.

Function of Hypodermis →

(1) Insulation → The fat stored in the Hypodermis helps to regulate body temperature by acting as an insulator, retaining heat in colder environment and preventing excessive heat loss.

(2) Energy store → The adipose tissue as an energy reservoir, storing fat that can be metabolized when the body requires additional energy.

(3) Protection → The hypodermis acts as a cushion that absorbs shock and protects underlying tissue, such as muscles, bones, and organs, from mechanical damage.

4. Anchorage of skin \rightarrow It Anchorage the skin to the muscles and bones, allowing the skin to move and stretch with the body without causing damage.

Mnemonic Ninja trick \Rightarrow

① Epidermis \rightarrow Outer layer is made up stratified squamous epithelial

② Dermis \rightarrow Middle layer of skin made up tissue or connective tissue

Hypodermis \rightarrow Thier are inner layer of the skin made up Adipose tissue (fat) loose tissue