



TEXTBOOK FOR BLOOD BANK & TRANSFUSION TECHNICIANS-I YEAR

As per the Latest Syllabus and Guidelines

Highlights

- Integration with Anatomy, Physiology & Other Subjects
- Includes Tables, Flowcharts & Diagrams for better understanding
- Equipment Management & Chemicals used in blood bank is explained in detail

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Skin and its Appendages

Kanchan Bhardwaj

INTEGUMENTARY SYSTEM

The skin, an outer covering of the body, is the largest organ of the body. It covers about 7,600 sq. cm area of body in an average adult and contributes for about 7% of person's body weight. The skin (**Fig. 5.1**) helps to maintain homeostasis. It is composed of epidermis, dermis and subcutaneous tissue.

Epidermis

It is the outermost layer of the skin. It is composed predominantly of keratocytes.

The epidermis is separated from the dermis by a basement membrane. It is avascular and nourished by diffusion from capillaries of the dermis. The epidermis and its derivatives like hair follicles, sweat glands and sebaceous glands have the capability to regenerate. In second degree burns, the spared dermis acts as a barrier to bacteria (skin's most important function). The epithelium of adnexa serves as the starting point of regeneration.

Four layers of epidermis from outer to inner are:

Stratum corneum, stratum lucidum, stratum granulosum and stratum germinativum

1. **Melanocyte** in epidermis produces the pigment melanin. **Melanin** is the substance responsible for color of the skin and hairs. **Epidermis** is thickest over palms of hands and soles of feet. The junction between epidermis and dermis is known as **rete ridges**. The interlocking rete ridges produces ripples on the surface of skin (fingerprints).

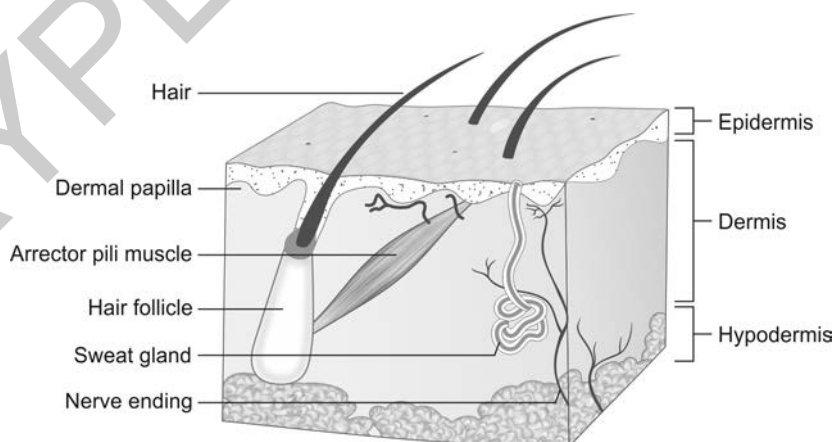


Fig. 5.1: Section of skin and its appendages.

Dermis

It is the largest part of the skin and is often called true skin. It is made up of two layers:

1. Papillary dermis and reticular dermis. Papillary dermis is superficial lying deep to epidermis and papillary dermis is composed of loose connective tissue which is highly vascular. Dermis has its own blood supply, nerve, lymph, sweat, sebaceous and hair root.
2. Both, epidermis and dermis are essential for regeneration and protection from infection, one of the most important functions of the skin.

Superficial Fascia or Subcutaneous Tissue

The superficial fascia or subcutaneous tissue is composed of loose areolar and adipose tissue. It unites the dermis of the skin with the underlying deep fascia.

Deep Fascia

The deep fascia is a dense, inelastic membrane, which separates the superficial fascia from the underlying structures such as muscles. It sends septa between the muscles from its deep surface called intermuscular septa.

Subcutaneous Tissue/Hypodermis

- ❖ It is also known as hypodermis and is made up of fat.
- ❖ It produces cushion between skin layers, muscles and bones.

Epidermal Appendages

These are the down growths of epidermis into the dermis—**glands, nails and hair**.

Glands

Ecocrine glands

- ❖ These are sweat-producing glands found all over the body except lips, nail beds, ears, penis and labia minora.
- ❖ Highest density of ecocrine glands is found on palms and soles of the body.
- ❖ Ecocrine glands exit the body independently on hair shaft.

Apocrine glands

- ❖ Seen in axillae, breast, anal region, ear canal and labia majora.
- ❖ Apocrine glands become active during puberty.
- ❖ Activity of apocrine gland needs high output of sex hormones.

Sebaceous glands

Found abundantly in face, scalp, upper back and chest. Sebaceous glands are absent over palms and soles. The secretion of sebaceous glands is known as sebum.

Nail

- ❖ Hard transparent plates of keratin cover the dorsal surface of fingers on hands and feet.
- ❖ Nail roots are covered by a thin layer of skin called **cuticle**.
- ❖ Average growth of nail is **0.1 mm per day** and it grows throughout the life.
- ❖ Fingernails grow faster than toenails, complete renewal of finger nail takes 170 days where as toe nail takes 12–18 months.

Hair

- ❖ Hair are distributed all over the body except palms and soles.
- ❖ Hair follicles usually occur along with sebaceous gland and constitute **pilosebaceous unit**.
- ❖ **Arrector pili** are the muscles attached to hair follicles and are responsible for goosebumps.
- ❖ **Hair color is determined by melanin present in the hair shaft.**

Functions of Skin

- ❖ Protection
- ❖ Homeostasis
- ❖ Thermoregulation
- ❖ Sensory function
- ❖ Vitamin D production

TEXTBOOK FOR BLOOD BANK & TRANSFUSION TECHNICIANS-I YEAR

Salient Features

- Covers every aspect of blood transfusion required for the diploma and degree students in easy language.
- Covers general orientation of human body including anatomy, physiology, pathology, microbiology, and pharmacology.
- Equipment management and chemicals used in blood bank have been explained in detail.
- Focuses on hand hygiene and prevention of cross infection.
- Covers basic life support and cardiopulmonary resuscitation.
- Basic computer skills have been explained in detail.
- Basic English and soft skills are a special topic.
- Comprise 62 chapters with tables, figures, flowcharts, and diagrams for ease of understanding of students.

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