

## Science of Skin and Hair

### 6.1 Introduction

As a cosmetologist it is important for you to know about the composition of the skin. And knowing the art of facial and make – up application will make you a true beauty expert.

### 6.2 Objectives

After reading this lesson you will be able to

- Know skin and it's structure
- Understand different types of skin
- Learn skin diseases/disorder's

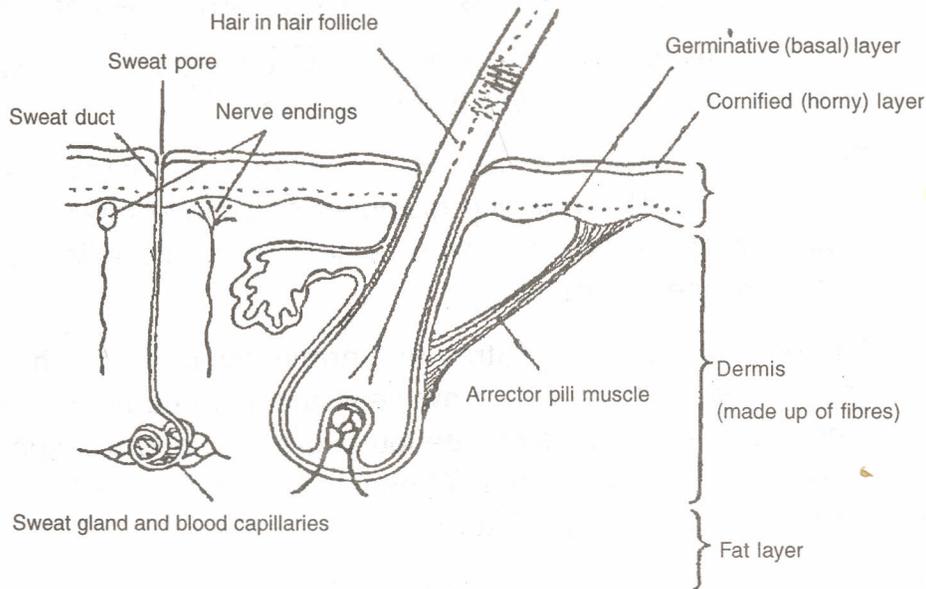
### 6.3 Skin

The skin is very elastic, durable, and complex. It is the largest organ of the body. It is about 20 square feet of tissue that weighs about 6 or 7 pounds. On the eyelids, the skin is thin but on the soles of the feet it may be ½ inch thick.

The skin is frequently called “The mirror of the body”. A healthy skin is usually a sign of good health. On the other hand, a serious illness often shows it's presence on the surface of the skin. The study of the skin is known as dermatology and a dermatologist is a doctor who specializes in skin treatment.

80 **Structure of the Skin** – The skin has three major layers.

1. Epidermis – Outer Layer, That we see just below the subdermis.
2. Dermis – Layer middle
3. Saldermis - Inner layer



Simplified diagram of a section across the skin

## Layers of the Skin

The outer skin layer or epidermis has under it an elastic layer called the dermis. The outer epidermis is constantly being worn away (which is why stains on the skin 'wear off'). The epidermis has a lower-most layer called the germinative or basal layer, where the cells divide to produce new skin epidermis. As the cells produced in the germinative layer are pushed upwards by the new cells produced underneath (a very similar pattern to hair growth) they produce keratin and have pigment laid down. By the time they reach the outer surface of the epidermis they are dead and scale-like and form the outer cornified or horny layer of the epidermis. This layer acts as the main barrier against water loss and infection. The epidermis is shown in illustration above. The cornified layer is particularly thick in non-hairy skin and has ridges for better grip, and on the hands, these form finger prints.

Under the epidermis is the **dermis**, which is made up of fibres (not cells) of elastic proteins called collagen and elastin which give skin its ability to stretch.

Notes ....

The epidermis is further divided into four distinct layers –

- i. The cornified layer (Stratum Corneum) – It is the surface layer of the skin. The cells of this layer contains a hard substance called keratin. This layer is very tough and nearly waterproof. The topmost cells are constantly being worn away and shed.
- ii. The clear layer (Stratum Lucidum) – this consists of a thin layer of small cells through which light can pass.
- iii. The granular layer (Stratum Granulosum) – It contains dead cells. These cells look like granules and move towards the surface of the skin. They replace cells in the cornified layer that have been worn away.
- iv. The germinative layer (Stratum Germinativum) – It is above the dermis. In this layer, new cells are continually formed. Among these new cells can be found great numbers of special cells called melanocytes. These cells contain melanin, a brownish pigment that determines skin colour.

The Epidermis consists almost entirely of dead and dying cells. It has almost no blood supplies, except in the deepest layer.

The dermis or true skin is made up many interwoven fibres that form a tough, elastic network. In the dermis many nerves, glands, blood vessels, and hair are found.

The dermis is divided into two layers :

- i. The papillary layer
  - ii. The reticular layer
- **The Papillary Layer** : It's tiny finger like projections that anchor the dermis to the epidermis. They are well supplied with blood vessels.
  - **The Reticular Layer** : This contains many structures like nerves, oil glands, sweat glands, hair follicles, blood vessels etc.

**Functions of the Skin** – The skin has a variety of functions –

- a. Temperature regulation
- b. Protection: It protects the body from – heat, cold, bacteria, excess fluid and harmful elements in the environment.
- c. Absorption
- d. Sensation
- e. Secretion
- f. Excretion
- g. Regulation
- h. Respiration
- i. Hydration

### Intext Questions 6.1

1. Skin is very thin on the
  - a) Soles of feets
  - b) Eye lids
  - c) Palms
  - d) Face
2. Which one is the inner layer of the skin
  - a) Dermis
  - b) Stratum lucidum
  - c) Epidermis
  - d) Saldermis
3. Epidermis is divided into –
  - a) Two layers
  - b) Four layers
  - c) Three layers
  - d) Five layers
4. Indicate whether the following statements are True (T) or False (F):
  - a) Skin is the largest organ of the body.
  - b) Dermis has four layers.

- c) Skin has only two functions to perform.
- d) Skin colour is determined by melanin.

## 6.4 Common Skin Problems

### Skin Disorders

1. **Acne** – During the teenage years, the oil glands become very active. When the pores that allow oil to reach the skin surface become clogged, pimples can form. Sometimes these pimples get worse and take the shape of acne. Serious cases of acne should be referred to a dermatologist.
2. **Blackheads or Comedones** – They are also caused by clogged pores. Sebum hardens and forms a plug. Steaming is helpful to clear up this condition.
3. **Whiteheads or Milia** – They result when sebum accumulates beneath the surface of the skin.
4. **Steatoma, or Wen** – It is a sebaceous cyst. This is a tumor of the sebaceous glands that forms under the skin. They vary in sizes.
5. **Asteatosis** – In this condition sebaceous glands secrete very little sebum and the skin becomes very dry and scaly. It occurs most frequently in older people.
6. **Seborrhea** – In this condition sebaceous glands are over active. The surface of the skin becomes very oily and shiny.
7. **Hyperhidrosis** – This problem causes abnormal sweating even in winters.
8. **Prickly heat or Miliaria Rubra** – This is inflammation of the skin around the skin pores. It appears in this form of small red pimples with itching. Various powders and lotions are helpful in this condition.

### Diseases

**Eczema:** The cause is unknown. It appears as dry or moist patches

on the skin that can be mildly annoying to painfully irritating. It should be treated by a physician only.

**Allergies** : When a severe physical reaction to a particular substance occurs it is said to be an allergy. Some people are particularly sensitive to certain substances. The reaction may take the form of sneezing, breathing difficulties, itching or rashes. Cosmetic dermatitis is the term used by dermatologists to describe allergic reactions caused by the application of cosmetics. Some chemical will harm the skin of some people whereas the same chemicals will not harm another's skin. So a cosmetologist has to be very careful before using chemicals on clients. She should always perform an allergy test before using chemicals. But if your patron gets allergy due to the use of some cosmetics, she should be immediately sent to a dermatologist.

**Types of Skin** : There are seven types of skin

1. Normal skin
2. Dry skin
3. Oily skin
4. Combination skin
5. Sensitive skin
6. Dehydrated skin
7. Sallow skin

1. **Normal Skin** : It is a very healthy skin. The oil glands secrete enough oil to prevent water evaporation from the skin. Proper amount of oil gives the skin its attractive smooth sheen.
2. **Dry skin** : The direct cause of dry skin is the loss of too much water by evaporation from the cells of the skin and not lack of oil. When the cellular water level falls too low, cells of the epidermis break apart and are rapidly shed from the skin surface. The flakes found on dry skin are actually the loose dehydrated cells.

The natural oil produced by the body oil glands acts as a protective sheet. This film prevents excessive evaporation of water from the cells.

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3. **Oily skin** : When the oil glands are very active, they make the skin oily. Oily skin is probably the easiest skin problem to control successfully. There is no tissue damage as with dry skin or acne. Oily skin is basically healthy skin. The oil provides an excellent shield against water evaporation. In addition oily skin shows the sign of aging less than do other types of skin.
4. **Combination skin** : It is a combination of dry and oily areas. The oily panel is found in the centre of the face, forehead, nose and chin with a wings of open pores on either side of nose, or there may be small patches of oiliness on various parts of the face with normal or dry areas in the other parts.

**Intext Questions 6.2**

1. Which one is the best skin
  - a) Dry skin
  - b) Oil skin
  - c) Normal skin
  - d) Combination skin
2. Combination Skin is combination of -
  - a) Dry and Oily skin
  - b) Dry and Normal skin
  - c) Oily and normal skin
  - d) None of the above
3. Eczema disease should be treated by –
  - a) A cosmetologist
  - b) A dermatologist
  - c) physician
  - d) None of the above
4. Indicate whether the following statements are True (T) or False (F) :
  - a) Comedones is a technical name for blackheads.

- b) Eczma is a disorder of the hair.
- c) Whiteheads occurs due to accumulation of sebum.
- d) Overactive oil glands causes the skin to be dry.

### 6.5 What have you learnt

In this lesson you have learnt about the

- Skin its structure
- Types of skin
- Functions of the skin
- Common skin problems and diseases

### 6.6 Terminal Questions

1. Explain the structure of the skin with the help of well labelled diagram.
2. List different types of skin.
3. Explain in brief four disorders of the skin.

### 6.7 Answers to Intext Questions

#### 6.1

1. (b)
2. (d)
3. (b)
4. a) T b) F c) F d) T

#### 6.2

1. (c)
2. (a)
3. (c)
4. a) T b) F c) T d) F