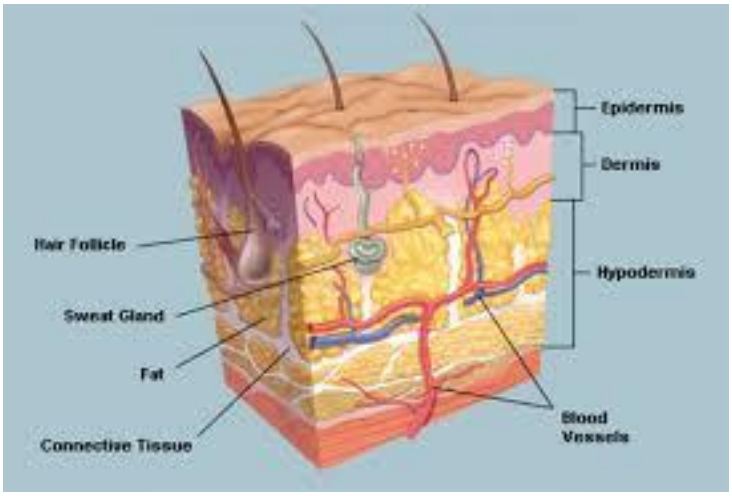
Skin structure and function

Introduction The integument or skin is the largest organ of the body, making up 16% of body weight, with a surface area of 1.8 m2 . It has several functions, the most important being to form a physical barrier to the environment, allowing and limiting the inward and outward passage of water, electrolytes and various substances while providing protection against micro-organisms, ultraviolet radiation, toxic agents and mechanical insults. There are three structural layers to the skin: the epidermis, the dermis and subcutis. Hair, nails, sebaceous, sweat and apocrine glands are regarded as derivatives of skin . Skin is a dynamic organ in a constant state of change, as cells of the outer layers are continuously shed and replaced by inner cells moving up to the surface. Although structurally consistent throughout the body, skin varies in thickness according to anatomical site and age of the individual.



Skin anatomy

The epidermis is the outer layer, serving as the physical and chemical barrier between the interior body and exterior environment; the dermis is the deeper layer providing the structural support of the skin, below which is a loose connective tissue layer, the subcutis or hypodermis which is an important depot of fat . Epidermis The epidermis is strati®ed squamous epithelium. The main cells of the epidermis are the keratinocytes, which synthesise the protein keratin. Protein bridges called desmosomes connect the keratinocytes, which are in a constant state of transition from the deeper layers to the super®cial . The four separate layers of the epidermis are formed by the di□ering stages of keratin maturation. The epidermis varies in thickness from 0.05 mm on the

eyelids to 0.8±1.5 mm on the soles of the feet and palms of the hand. Moving from the lower layers upwards to the surface, the four layers of the epidermis are: stratum basale (basal or germinativum cell layer) stratum spinosum (spinous or prickle cell layer) stratum granulosum (granular cell layer) stratum corneum (horny layer).

Dermis

The dermis varies in thickness, ranging from 0.6 mm on the eyelids to 3 mm on the back, palms and soles. It is found below the epidermis and is composed of a tough, supportive cell matrix. Two layers comprise the dermis:

a thin papillary layer

a thicker reticular layer.

FUNCTIONS OF SKIN:

Provides a protective barrier against mechanical, thermal and physical injury and noxious agents. Prevents loss of moisture.

Reduces the harmful e□ects of UV radiation.

Acts as a sensory organ. Helps regulate temperature control.

Plays a role in immunological surveillance.

Synthesises vitamin D3 (cholecalciferol)

. Has cosmetic, social and sexual associations.