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FUNCTIONS OF THE SKIN.

The skin carries out the following functions: **(a)** Protective Function; **(b)** Thermo-regulation function; **(c)** Sense Function; **(d)** Respiratory Function; **(e)** Secretive Function; **(f)** Defensive Function; **(g)** Reproductive Function.

Protective function. The skin serves as a protective barrier against mechanical stimuli of various nature, such as traumas, pressures, frictions or hits and this property is due to the elasticity of the collagenous and elastic fibres and to the state of turgidity of the tissue. In the cutaneous areas which are more subjected to mechanical stimuli, to contacts or rubbing, there is a thickening of the corneous layer (callousness). Another example of protective function is what happens with chemical agents and it can be ascribed to the tampon ability of the skin; the protection against solar radiations is carried out by melanin and by an acid contained in the sweat, the urocanic acid, and both of them carry out a screening action against the ultraviolet radiations.

Thermo-regulamentative Function. The skin serves both as insulator and as thermal regulator. The function of thermo-regulation is based on the flow of the blood to the cutaneous vessels and on the sudoriparous glands. The alternation of vasoconstriction and vasodilatation in the capillaries leads to a rapid change in the haematic flow in relation to the external temperature. The sudoriparous glands play an important role in the thermal regulation; in fact a big quantity of heat is removed by the organism through the evaporation of sweat and this also happens when the secretion is not visible. The adipose layer, abundant in the hypoderm, has a low thermal conductivity and intervenes in this function of thermoregulation of the skin: therefore the skin maintains the rest of the body at a suitable temperature, independently from the external temperature (naturally within certain limits).

Sensorial Function. Thanks to the receptor organs, the cutaneous innervation is able to perceive the pressure, thermal and pain stimuli, to transmit them to the central nervous system and to allow the individual to adapt to the external environmental conditions. The corpuscles of the sensibility and the nervous terminations of the sensibility are highly specialized, that is there are specific receptors for heat, cold, pain and itch. The pressure sensibility varies according to the regions of the human body, for example on the wrists and on the back of the feet it is 3 times and half times bigger than that on the abdomen or on the forehead. If a pressure stimulus on the skin increases, the tactile sensibility manifests itself first with a sense of pressure, than with a sensation of pain. Following variations in temperature the receptors with specific properties for the conduction of the stimuli of hot and cold act quickly and make the adaptation to the new situation possible in few minutes.

Respiratory function. The oxygen and the carbon dioxide can be absorbed from the skin. The oxygen reaches the skin both through the external air and through an internal way which is constituted by the blood.

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Some calculations show that the quantity of oxygen absorbed by the skin is around 5 litres per day.

Secretive function. Catabolites and wastes are eliminated by the organism through the skin. The skin eliminates CO₂, water and sebum, besides ions, sodium, small quantities of potassium, magnesium, calcium and chlorine are eliminated thanks to the action of the eccrine glands. This phenomenon, in case of physical activity, can be balanced with the assumption of drinks that assure a water and salt reintegration. Sebum, besides the skin emollient function, has an antiseptic and antimicrobial function.

Antimicrobial defensive function. The bactericidal and fungicide properties are to be ascribed to the acidity of the cutaneous surface (about pH 5) and to the hydrolipidic film of the sebaceous glands. Each time that extraneous substances such as bacterias, virus or fungi penetrate the organism, an active process of protection starts, determined by various types of cells, all of which are involved in the immunity protective function. The defensive ability of the skin is optimal if it is under good conditions, but it decreases in case of acne or seborrhoeic skin, because in these cases the auto-sterilizing ability is smaller and the composition of the sebum is different and it lacks some important elements. Sebum and sweat, while going outwards, develop a anti-fungi drein, cleaning the sudoriparis ducts and the sebaceous follicles.

Reproductive function. The process of cellular renewal is peculiar to the skin; the quantity of eliminated skin is progressively replaced by its continuous cellular renewal.