FACIAL SKIN CARE

THESIS
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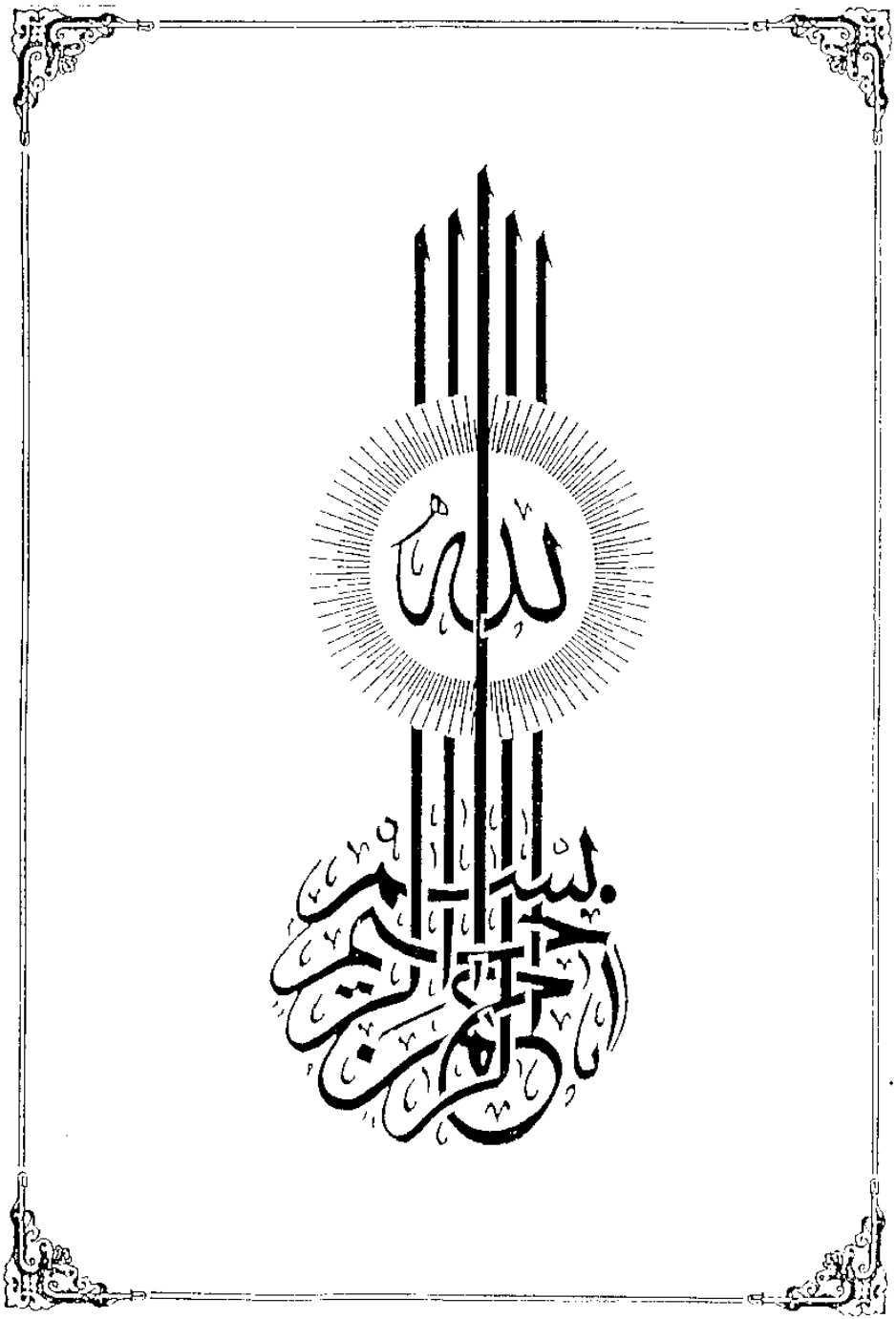
بسم الله الرحمن الرحيم

" قالوا سبحانك لا علم لنا إلا ما علمتنا إنك
أنت العليم الحكيم "

صدق الله العظيم

سورة البقرة/ آية ٣٢



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Care of the face is daily concern of every individual and presents a serious problem for those with skin diseases in this area.

Much attention has been directed towards cleansing of the skin, especially facial area. Various products are used to cleanse, to protect,to refine facial skin, and to camouflage blemishes.

These products are applied for psychologic reasons in order to normalize the appearance by diminishing or disguising facial disfigurements and in many instances mask signs of aging. It assists the subject in becoming more socially acceptable and allows the creation of a well groomed look that let him or her reenter the mainstream of life. The person who has a facial disfigurement, no matter how large or how small, whether it is caused by skin disease, trauma, or a birth anomaly can use these products to conceal the lesion.

The use of cosmetics is essentially the art of illusion. A cosmetic may be defined as any substance externally applied to the body to enhance beauty.

Many of these preparation used by men, women or even children are dispensed on commercial level hence a sufficient knowledge about these preparations, regarding chemistery, indication, contraindications are lacking.

This thesis aimed at providing detailed information about facial skin care stressing on cleansers, creams, soaps and masks regarding their chemistery, indications, their effects, benefits and side effects.

REVIEW OF LITERATURE

PERCUTANEOUS ABSORPTION

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The stratum corneum structure:

The stratum corneum has a unique two compartment structure. It is composed of interlocking, vertical columns of polyhedric protein enriched corneocytes without nuclei. These cells have thickened membranes embedded in a lipid enriched intercellular matrix. The extracellular lipids of the stratum corneum (SC) exsist in layers called intercellular lamellae. These organelles are enriched in glycosphingolipids, free sterols, and phospholipids. In addition to lipids, the lamellar body is rich in certain hydrolytic enzymes.

The lipids in lamellar bodies provide a barrier function, and are essential to trap water and to prevent exessive water loss[8l].

Stratum corneum cells are keratin filled, biologically inactive, shrunken cells[l42].

Percutaneous absorption:

An important property of the skin is to act as a protective barrier between an individual and the physical environment. The barrier limits loss of water, protects against entry of toxic agents into the body, and resists mechanical trauma[ll0].

The composite structure of the skin permeability barrier is indicated by the three distinct layers the stratum corneum (10μ), viable epidermis (100μ), and the papillary layer of the dermis (100-200μ). The papillary arterial plexus forms the lower boundary of this composite slab; the permeability of capillary walls to other macromolecules is sufficiently great so that diffusing molecules are readily absorbed into the capillary circulation[109].

The stratum corneum is formed and contiuously replenished by the slow upward migraton of cells from the germinative basal layer of the epidermis[113].

The conversion of aqueous epidermal cells into dried, compact, keratin containing stratum corneum cells is the crucial event in the continuously developing epidermis that largely determines the low permeability of the skin. Transformation from an aqueous fluid medium characterized by liquid state diffusing to a dry semisolid keratin membrane characterized by a much lower fiber type diffusivity. The filament matrix ultrastructure of the intracellular keratin plays a role in the mechanism of diffusion, particularly for selective permeability of polar and non polar molecules. The diffusion process appears entirely passive and determined mainly by the intrinsically low diffusivity and complex ultra structure of the intra cellular keratin[109].

The stratum corneum represents a barrier to diffusion several orders of magnitude greater than the underlying tissue. Percutaneous absorption involves a series of individual transport processes occurring in sequence. First, molecules must be adsorbed at the surface of the stratum corneum; next, they diffuse through it then desorb into the viable epidermis, and diffuse through the epidermis and the papillary dermis until they reach the capillary plexus and finally their uptake by the skin's micro circulation[142].

The ultimate goal of in vitro skin permeability is to explain and predict percutaneous absorption in vivo[128].

For most substances, the slowest or rate limiting step in skin penetration is the diffusion rate of the substance in the horny layer of the skin[5].

Lipids play a very important role in the composition of the stratum corneum. It is readily assumed that the barrier function may be destroyed by the removal of lipids[115].

The destruction of the barrier function by solvents that possess both polar and non polar groups, or by successive extraction with chloroform and water or with Sodium Lauryl Sulfate SLS and water leads to extraction of lipids and/or water soluble materials and subsequent denaturation of keratin filament. Hydration decreases the barrier function, assuming that tight structure of the stratum corneum would become loose by hydration[133].

Factors influencing the barrier function and percutaneous absorption:

a. Concentration of compounds and type of vehicle

a. The degree of penetration increases with the increase in the concentration of a compound in a given vehicle until it is saturated. When the concentration is kept constant while the solubility is increased by choosing the proper vehicle, the amount of penetration becomes lower. The lipophilic and hydrophilic nature of a compound and the vehicle influence percutaneous absorption[133]. The rate of penetration depends on the size and configuration of the molecule[143].

b. Other factors may alter penetraton through the skin such as anatomic area, the size of exposure, temperature, humidity, and presence of disease of the skin[122].

c. Solvents: The use of organic solvents usually enhance percutaneous absorption. They increase the permeablity of the skin by attacking lipid containing cellular membranes[123].

Solvents may damage stratum corneum barrier by depleting neutral lipids and causing loss of inter cellular bilayers. An immediate secretion of new lamellar bodies follows, to restore the intercellular lipids within 24 to 48 hours. Organic solvents promote absorption to a moderate degree by dissolving