EDITORIAL

Skin care

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The status of skin as a viable 'organ entity' has been a matter of great ambiguity in human perception. From time immemorial, humans learnt the art of keeping their skin clean and glowing using various minerals, herbal and animal derived products and this art has been evolving ever since. Even though with the advances in biology and medicine, status of skin as a vital component of the human body is recognised, largely our skin is still perceived as a living fabric covering the internal organs of our body. Indeed, the human skin is one such amazing living fabric with dynamic functions, seamlessly integrated to perfection through evolution in nature over eons. In fact nature has monopoly in producing a variety of multi- functional biological materials like skin with actuation, sensing, healing and many other functions crafted into the primary framework of an organism (1). From aesthetic view point, ever since the dawn of human civilization, the skin played an important role in our makeup as it constitutes a large part of our physical image. In the Pharaonic era, the Egyptian women focused on their skin care in a way that was unprecedented in human history (2). Ancient knowledge on skin care is worth imitating and appreciating, after all, Chinese women mastered the skin rejuvenation techniques to achieve flawless porcelain skin thousands of years before serums were invented and a Japanese Geisha knew the art of skin cleaning to her glowing complexion using herbo-mineral preparations. In Ayurveda-Charakasamhita (3-6) (literature on ancient Indian system of medicine dating back to ~ 5000 years) a series of promotive and curative methods were followed for improving youthful radiance of the skin, protection of skin from normal wear and tear, deep healing, enhancing and nurturing, anti-inflammatory strengthening the skin's metabolic mechanisms and maintaining skin health and retarding aging. The skin tone, smoothness, pigmentation, elasticity and moisture all contribute to youthful appearance and overall health of the individual.

It is interesting to document that several practices in the modern specialty of aesthetic dermatology such as microdermabrasion, dermabrasion, several cosmetics and phototherapy can be traced back to ancient Egyptian practices (7). Modern dermatology has made great strides in the area of genetics, pharmacology and laser technology to forge improved patient management (8,9). The establishment of subspecialty of psychodermatology (10-12) is aimed at enhancing patient support and raise awareness amongst physicians and patients alike on the wider social implications of skin disease. These milestones significantly guide patient care and serve to benefit everyone involved.

The skin being the largest, highly complex and durable organ, serves a number of important functions that are vital to overall good health. Morphologically, the skin, consists of multiple layers including the epidermis, dermis and hypodermis, made from specialized cells housing perspiration glands, sebaceous glands, sensory receptors, hair follicles, lymphatic, blood vessels, and host of other immunological components with distinct functions apart from providing the basic structure and protection for the internal organs (13,14).

Skin provides important protection for all of the other organs as well as the bones, ligaments, muscles and nerves. It provides a protective shield against pathogens, acts as a barrier between the external and internal environments; regulates heat; controls evaporation to prevent excess fluid loss; allows for the excretion of toxic waste through sweating; and can help with the transmission of medications through absorption. At the same time, the skin contains many sensory nerves that react to touch, vibration, heat, cold and alert us of tissue damage. When exposed to morning sun (UV) light, vitamin D synthesized in the skin helps to improve overall health by furnishing necessary nutrient for bones, skin, teeth and many metabolic processes (13,14).

The epidermis-the outermost layer of the skin most exposed to environmental pollution and radiation, tends to show the most signs of damage, including wrinkles, sagging, bruises and dry patches. As skin ages, it becomes thinner and less pliable, making it more susceptible to injury. Without healthy skin, the rest of the body would be much more vulnerable to disease and infection. The more we do to care for our skin, through proper nourishment, cleansing, using sunblock with UV protection (SPF), the better off we'll be. Thus our skin is an organ that needs to be treated with tender loving care. Skin color is due to melanin, a pigment produced in the epidermis to protect us from the sun's potentially cancer-causing ultraviolet (UV-A,B) rays (15). Sunnier and hotter environments bring the risk of serious skin damage resulting in loss of skin elasticity, tonicity, leading to premature skin ageing as revealed by the dark patches, loose skin and wrinkles. The radiation induced ROS which malfunction the vital skin cells of dermis altering their cell cycle often inducing DNA damage causing melanoma. Australia has the world's highest rates of skin cancer (16), accounting for more than 80 percent of all cancers diagnosed there each year where the majority of the population with fair skin is of northern European descent. Thus, protecting skin with proper UV protection skin formulations is an important method to avoid harmful radiation damage of the skin that leads to skin cancer. Even though several new skin preparations are available in markets, the hunt for natural, efficient and safer SPF is still on.

The skin is a dynamic organ that contains different cells bearing the elements of the innate and the adaptive immune system which are activated when the tissue is under attack by invading pathogens (17,18). The cutaneous immune responses can symbiotically modulate the skin microbiota. Dysregulation of these mechanisms is associated with inflammatory diseases of the skin. Investigation of immunological mechanism underlying inflammatory skin disorders and unravels the factors that influence the immuneregulations of skin should pave way for new immunotherapeutics to reverse premature skin ageing.

Cosmeceutical industries are now smart enough to adopt oriental and occidental skin care techniques and ancient formulae prescribed in the traditional medicines, tactically blending modern scientific knowledge to evolve scores of new skin care products. Thus, a multibillion dollar industry has been created to cater to the needs of skin care. With the growing knowledge in skin biology, the science behind skin care formulation evolves simultaneously, paving new and innovative ways to create products to treat a multitude of skin conditions. However, irrespective of innovations, one must follow basic tenets of cosmetic chemistry to produce effective products. Unfortunately, mushrooming new skin care companies today often make unsubstantiated claims about their products that are ineffective and often toxic. Compatibility of ingredients in skin care formulations should be carefully assessed. The science behind the efficacy of certain time-tested raw materials in addition to exploring new and exciting offerings is an important first step; having a solid understanding of what other categories of ingredients

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are necessary to create an excellent formulation is paramount. Taking undue advantage of less stringent regulatory restrictions, without proper validation a large number of OTC products are unleashed relentlessly into the market whose genesis is solely based on commerce rather than sound scientific rationale and concern for true skin care. While dermatological products largely used in the treatment of pathogenic skin conditions are made with sound medical understanding, mindless use of skin care OTC products will create large number of future patients with damaged skin conditions arising out of prolonged use of spurious cosmeceuticals and their chronic toxicity. A rational integration of traditional art of skin care and modern scientific knowledge would pave way for new generation skin treatment protocols, dermal technologies and skin care preparations for the protection, rejuvenation of skin and treatment of various skin aliments.

"The Journal of Skin" is an important step forward in our effort to disseminate of knowledge in the advanced areas of research in cosmetic science, and various branches of dermatology, addressing multifarious key issues relating to detection and treatment of skin diseases.

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