ANTI-AGEING PROPERTY OF NATURAL EXTRACT: A SYSTEMIC REVIEW

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ABSTRACT:

Skin is the largest organ of the integumentary system. The overall well-being& perception of health in humans, very much depends on skin health & beauty. Skin plays a vital role in immunity& protects the body against pathogens, maintains water and electrolyte balance & also regulates body temperature. Epidermis is the protective covering over the body surface which serves as a barrier to infection. Thinning of this epidermal layer, loosening of collagen & elastic fiber, leads to the wrinkle formation and causes ageing. Ageing occurs due to the intrinsic factors like genetics, cellular metabolism, hormone & metabolic process or extrinsic factors like sun exposure, smoking, diet and pollution.Herbs help in biological functioning of the skin & supplies nutrients required for healthy skin. Herbs contain several phytochemicals like carotenoids, terpenoids, polyphenols which possesses anti-aging activity. A few herb which shows anti-aging activity includes, Aloe, Cucumber, Ginseng, Honey ,Turmeric. Curcumin (diferuloyl methane), the natural yellow pigment in turmeric, is isolated from the rhizomes of the plant Curcuma longa. It constitutes about 3-4% of the composition of turmeric. Curcumin which acts as a superoxide scavenger & as a singlet oxygen quencher. Therefore, the anti-ageing property of Turmeric is mainly due to the curcumin.

KEYWORDS : anti ageing, curcumin, phenolics, curcuminoids.

I.INTRODUCTION

Skin aging is the result of continual deterioration process because of damage of cellular DNA and protein. Aging process is classified into two distinct types, i.e. "sequential skin aging" and "photo-aging". Both types have distinct clinical and historical features. Sequential skin aging is universal and predictable process characterized by physiological alteration in skin function. In the aging process keratinocytes are unable to form a functional stratum corneum and rate of formation from neutral lipids slows down, resulting in dry pale skin with wrinkle. In contrast, photo aging is caused by over exposure to UV rays from sunlight. It is characterized by dry, pale and shallow skin,displaying fine wrinkles as well as deep furrows caused by the disorganization of epidermal and dermal components associated with elastosis and heliodermatitis.

Herbs and plants have already proved useful as a tool in complementary medicine.Cosmetic products are used to protect skin against exogenous and endogenous harmful agents and enhance the beauty and attractiveness of skin. The use of cosmetics not only developing an attractive external appearance, but towards achieving longevity of good health by reducing skin disorders. The synthetic or natural ingredients present in skin care formulation that supports the health, texture and integrity of skin, moisturizing, maintaining elasticity of skin by reduction of type I collagen and photo protection etc. This property of cosmetic is due to presence of ingredients in skin care formulation, because it helps to reduce the production of free radicals in skin and manage the skin properties for long time.

The cosmetic products are the best choice to reduce skin disorders such as hyper pigmentation, skin aging, skin wrinkling and rough skin texture etc. The demand of herbal cosmetic is rapidly expanding.

The modern science and technology provides plastic surgery, laser rejuvenation, and many more invasive techniques. Noninvasive techniques do not involve any risks or complications and mostly free of sideeffects as compared to the invasive techniques which are more painful and laborious. Over the last decade, there has been an increase in the use of herbal extracts in cosmetics to reduce the ageing process. The extract of Turmeric, Ginseng, Honey, Wheat, Liquorice, Arjuna, Jatamansi are extensively used in herbal cosmetic industries due to their skin beneficial properties.

Curcumin (diferuloyl methane), the natural yellow pigment in turmeric, is isolated from the rhizomes of the plant Curcuma longa. It constitutes about 3-4% of the composition of turmeric. The turmeric spice has been used for many centuries mainly as a food additive, primarily because of its golden yellow color. The medicinal properties of this spice were recognized in Indian folklore medicine and in Ayurveda, which is an ancient Indian traditional system of medicine. It was used as a tonic for improving health and in various combinations for the treatment of diseases such as common cold.

The major break through in realizing the medicinal value of turmeric

came with the isolation of phenolics called "curcuminoids" , of which curcumin is the major constituent. Turmeric is used in ancient Hindu medicine as a treatment for sprains and swelling. While the therapeutic use of this treasured spice has been commonplace throughout history, emerging medical research has begun to elucidate curcumin's beneficial effects for a range of diseases and conditions. Much of the recent science has focused on its effects against cancer, both therapeutically and prophylactically. Curcumin's potential apparently stems from its ability to suppress the proliferation of a wide variety of tumor cells and to inhibit harmful molecules and enzymes, as well as its antioxidant and antiinflammatory properties.

II.TURMERIC

***Biological Source*:** Turmeric consists of dried as well as, fresh rhizomes of the plant

Curcuma longa belonging to the family Zingiberaceae.

Phyto-constituents: Turmeric contains a yellow coloured substance known as curcuminoids. The chief component of curcuminoids is known as curcumin (50-60%). It also contains volatile oil, resin, camphor, camphene etc.

Role in anti-ageing: The chief constituent of Turmeric is curcumin which acts as a superoxide scavenger & as a singlet oxygen quencher. Therefore, the anti-ageing property of Turmeric is mainly due to the curcumin.

III.ANTIAGING CREAM AND ITS EFFECT

Any anti-aging creams, function in four ways to help the slow skin aging process. It is a very potent antioxidant and it helps maintain the health of the mitochondria, which is the powerhouse of the cell. When this cell is compromised, it cannot perform youthful repair functions. Also, it helps turn off an inflammatory messenger known as nuclear factor kappa B that can do much damage to the skin. Alpha-lipoic acid activates a collagen-regulating factor known as AP-1 that turns on enzymes that digest damaged collagen. Aged skin occurs when the slowdown in production of youthful new cells fail to replace the accumulation of damaged aged cells. Vitamin A stimulates skin cell renewal by increasing the rate of mitotic cell division. Anti-aging creams, make sure it has four important ingredients, such as alpha-lipoic acid, glycolic acid, retinoic acid and Vitamin A. Since ageing cannot be avoided, one can always opt for healthy ageing.

Turmeric is a spice used in Asian cooking that is famous in Ayurveda and Chinese medicine as an anti-ageing and healing herb.Turmeric possesses various biological properties that can aid in dealing with signs of ageing. The herb belongs to the ginger family and has a vibrant yellow color with a slightly hot bitter taste. Curcuminoids are a class of compounds that are isolated from turmeric powder. They serve as coloring agents and as strong antioxidants.

Curcumin belongs to this group and it is one of the most potent therapeutic agents belonging to turmeric. The volatile oil fraction of turmeric also possesses healing properties and contributes to the aroma of the spice. Turmeric's anti-inflammatory, antioxidant, anti-microbial, anti-cancer and other pharmacological properties makes it all rounder when it comes to therapeutic foods. Wrinkles, sagging skin, age spots and hyper pigmentation is seen. Wrinkles and sagging of skin occur generally due to loss of collagen (a structural protein that maintains a firm tissue), loss of fat tissue and gravitational force acting on the skin. Appearance of signs of ageing on skin is due to a number of factors: extrinsic and intrinsic. Extrinsic factors include smoking, air pollution, sun exposure, alcohol consumption and poor nutrition. Intrinsic factors are genetic background, declining hormonal activity and modification in growth factors. The most common solution recommended by all dermatologists is eating a diet rich in antioxidants.

Curcuminoids present in turmeric are strong antioxidants. Curcumin has antioxidant activity comparable to that of Vitamin C and E. It is known to treat conditions of oxidative stress (imbalance between prooxidants and antioxidants). It raises the level of antioxidant enzymes, scavenges free radicals that cause oxidative stress and inhibit lipid peroxidation (oxidation of fats present in cell membrane leading to cell death). So including turmeric in your diet can prove to be helpful in terms of supplementing your antioxidant intake.

Curcumin has been successful in stimulating antioxidant defences in human dermal fibroblasts. Low doses of curcumin increase the production of antioxidant enzymes. However when senescent cells were treated with curcumin, curcumin's ability to stimulate increase in antioxidant enzyme levels was impaired. These cellular responses indicate that curcumin at low levels only can support antioxidant defences which can be useful in developing an anti-ageing intervention. The discovery of the antioxidant properties of curcumin explains many of its wide ranging pharmacological activities. Curcumin is an effective antioxidant and scavenges superoxide radicals, hydrogen peroxide, and nitric oxide from activated macrophages. It inhibits the inducible nitric oxide synthase activity in macrophages. Human keratinocytes are protected from Xanthinexanthine oxidase injury by virtue of the antioxidant property of curcumin.

IV.SOLVENT EXTRACTION FROM TURMERIC RHIZOMES

Extraction of Curcumin from turmeric rhizomes using Soxhlation method.

The rhizomes of turmeric were dried in oven at 105ºC for 3 h.Dried rhizomes were triturated using mortar & screened through a sieve with mesh 80 to obtain uniform powder.The turmeric powder was stored in refrigerator to prevent moisture uptake.The Soxhlet extraction ,as the reference method,was performed as follows.100gm ground turmeric powder was weighed & embedded in a thimble &put in the Soxhlet apparatus which was gradually filled with 500 ml ethanolas the extraction solvent.The

extraction experiment was carried out at 60ºC with in 8 h.Upon completion of the extraction,the ethanol was separated from the extract.The residue was dried &weighed.

DISCUSSION

Phytochemicals derived from plants have a lot of skin beneficial properties related to UV protection, antioxidant action, matrix protection and skin hydration. Over the past decade, a lot of phytochemicals from the plant extracts have been explored and their biological activities well-studied in vitro. Therefore, there is a continuous requirement for more clinical studies with emphasis on the concentration of the ingredient in herbal products, their formulation, safety, and the anti-ageing effect duration.

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