Natural Skin Whitening Agents: A Current Status

S.K. Gupta, Archana Gautam and S. Kumar

Department of Pharmaceutical Technology, Meerut Institute of Engineering and Technology, Delhi-Roorkee Highway, NH-58, Baghpat Crossing, Meerut-250005, U.P., India

Abstract: In this scenario skin darkness is the biggest world wide problem. For treating/curing the skin darkness there is a competitive business in market among synthetic formulations and natural ones. But in regards to safety and less side-effects, natural agents are more preferred over the synthetic ones. Another prominent reason for the frequent use of natural agents also includes their availability and the economic budgets. Currently, a large number of efforts are ongoing in the field of development of successful skin whitening agents. In hypo-pigmentation, the skin whitening agents are used to inhibit melanin synthesis. This review has been emphasized on the study of various natural sources and formulations which are developed through natural sources.

Key words: Herbal Cosmetic · Skin Whitening · Pigmentation · Melanin Synthesis · Tyrosinase Inhibitor

INTRODUCTION

Cosmetics are always used in different forms to enhance beauty, to reduce wrinkles, fight acne and for controlling oil secretion from skin. Cosmetics are available in different forms as sunscreen, anti-acne, anti-wrinkle and anti-aging and are designed by using varieties of materials, either natural or synthetic. Mankind has then attractive plunge towards impressing others with their looks. In ancient times, there were no visualized fairness creams or any cosmetic surgeries. They had been the familiarity of nature, compiled in the ayurveda [1, 2].

White skin is an aspiration of every woman because it signifies wealth and beauty. In Asia, women are having a deep wish for of white complexion because of the warm typical weather that causes dark color [3]. Variations in skin color are outstanding to different levels of a pigment in the skin called melanin. Melanin is synthesized by special cells named melanosomes found in melanocytes with the action of an enzyme, tyrosinase [4]. The melanocytes distribute the melanin to the skin that gives the dark tint color to the skin [5]. Melanin plays an important role in protection of UV-induced dermal irritation. However, overproduction of melanin causes an esthetic problem as well as dermatological issue [3]. Skin whitening agents have potential to change the skin color partially or completely.

Most skin lightening products are targeted to inhibit tyrosinase because it is the first step in the pigment formation and can therefore block all pigment producing pathways [6].

Natural Skin Whitening Agents

Plant Extracts Used in Skin Whitening

Syzygium aromatica: Arung et al. [7] carried out a comparative study on skin whitening agent as eugenol and eugenol acetate. These active moieties were extracted from the buds of clove (Syzygium aromatica) with the help of methanol. After evaluation it was found that eugenol show 60% inhibition of melanin and eugenol acetate show 40% inhibition of melanin.

Magnolia officinalis: Ding et al. [8] worked on the crude extract of Magnolia officinalis. They found that the extract showed inhibitory effect on melanogenesis B16 cells in both mouse and zebra fish. On the other hand, when using zebra fish as a depigmenting assay system, Magnolia officinalis could inhibit both melanogenesis and tyrosinase activity in the in vivo model. By this study it was concluded that Magnolia officinalis a good quality skin whitening agent.
Muntingiacalabra: Balakrishnan et al. [9] carried out study on *Muntingiacalabra*. The extract of *Muntingiacalabra* prepared by decoction method using different parts of plant such as leaf, flower and fruit in different solvents like ethanol, aqueous, hydroethanol and petroleum ether. The result is that the leaf extract of *Muntingiacalabra* in hydroethanol has maximum antityrosinase and antioxidant activity.

*Holarrhenaantidysentrica* and *Pachygone ovate*: Narayanaswamy et al. [10] evaluated different medicinal plant extracts in depigmenting and antioxidant activities. The extracts were prepared by decoction method using different solvents. The ethanolic and aqueous extract of *Holarrhenaantidysentrica* and *Pachygone ovate* were found to possess the highest inhibition of DPPH (2, 2-diphenyl-1-picrylhydrazyl) radical.

*Blumeabalsamifer*: Saewan et al. [11] isolated nine flavonoids from the ethyl acetate extract of *Blumeabalsamifera* and estimated them for antityrosinase and anticancer activity.

*Plucheaindica*: Noridayu et al. [12] carried out study on methanolic extract of *Plucheaindica* which has shown antioxidant and acetyl cholinesterase inhibition properties.

*Ricinuscommunis*: Kadri et al. [13] carried out study on *Ricinuscommunis* plant. The hydro distillation method used for extraction of *Ricinuscommunis*. Antioxidant activity of the essential oil was determined by different test systems; carotene bleaching test, DPPH (1, 1-diphenyl-2-picrylhydrazyl) assay and reducing power assay.

*Intsiapalembanica*: Batubara et al. [14] carried out their study on 45 Indonesian plant material from 35 species of tyrosine inhibitor and antioxidant activity, using DPPH (1,1-diphenyl-2-picrylhydrazyl) method. Results of study concluded that *Intsiapalembanica* showed more potency in whitening, tyrosinase inhibition and antioxidant activities.

*Aesculus turbinate* and *Taxillusyadoriki*: Moon et al. [15] carried out antityrosinase activity by using various plant extracts including *Aesculus turbinate* and *Taxillusyadoriki*. The anti-tyrosinase activity was evaluated through *in vitro* mushroom tyrosinase method. The result showed that these plants showed inhibition of melanin and anti-aging activity.

Further the plants studies for skin whitening activity are discussed in Table 1.

### CONCLUSION

The search for skin depigmenting and lightening agents carried on has been the subject of all-embracing research due to their trouble-free accessibility and huge clinical outcome. Researchers in this field have extensively and vigorously found and identified healthier depigmenting and lightening agents throughout the history. To realize this ambition, dissimilarity types of compounds from both natural and synthetic sources have been investigated. Since a large number of tyrosinase inhibitors have been developed, expounding the justification of these inhibitors in skin-whitening efficiency has become more imperative. The majority of inhibitors have been included in topically applied cosmetics or cosmeceuticals. In conclusion, more exciting studies of the found inhibitors with a human clinical point of view are required and in our experience, this often needs the help and cooperation of cosmetic companies.

A better understanding of the complex interactions between regulators of the melanogenic pathway and the development of novel approaches to modulate pigmentation followed by strictly controlled clinical trials to assess safety and efficacy of these drugs would be desirable.

### REFERENCES


