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Melasma-Review of Current Treatment Modalities and Efficacy Assessment of a New ResorcinolBased Topical Formulation

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ABSTRACT

Melasma (from the Greek word "melas" meaning black) is an acquired skin hyperpigmentation that typically affects the sune-exposed areas of the face, which occur occasionally on the neck and rarely on the forearms. The term "chloasma" (from the Greek word "chloazein" meaning green) is used to identify melasma during pregnancy (but since the pigmentation is never green, it is preferred to use the term "melasma"). It clinically presents on the face as symmetrical hyperpigmented macules (the colour ranges from light brown to bluish grey depending on the deposition depth of melanin). There are typically three commitment patterns: centrofacial (includes eyes, forehead, upper lip, neck, mouth, malar (includes eyes and ears), and mandibular (includes mandible).

It is a common disorder that affects millions of people around the world, with the exact prevalence varying from 1.5% to 33.3%, depending on the population. Melasma, although it can also be seen in men, most commonly affects women of reproductive age with darker complexions (Fitzpatrick skin type IV-VI) The prevalence among pregnant women can be as high as 70 per cent. Pregnancy melasma usually improves a year after delivery but areas of hyper pigmentation may never resolve completely. Due to its facial involvement, melasma has a significant impact on the quality of life of the people affected.

Melasma pathogenesis is complex, and not yet well understood. Known risk factors include genetic predisposition, ultraviolet (UV) sensitivity to radiation, darker phototype, hormonal effect (pregnancy, oral contraceptives, elevated luteinizing hormone rates, thyroid disease), and other drugs such as phenytoin. UV-radiation is believed to cause proliferation of melanocytes. Although the number of melanocytes in lesional and perileal skin is similar, melasma can be caused by more active melanocytes in the affected skin.

In melasma lesions, the stem cell factor of the fibroblast and tyrosine kinase receptor c-kit, as well as the expression of the vascular endothelial growth factor (VEGF), are increased. The direct role of VEGF in melasma pathogenesis is confirmed by the observation of an increased number and size of blood vessels in melasma lesions, as well as the finding that VEGF receptors are expressed by human melanocytes in vitro. This warrants research into new treatment options to target melisma's vascular portion. Melasma lesion histopathology indicates an elevated deposition of melanin in all layers of the epidermis, with more pronounced elastosis and mast cells than normal skin. The most affected biological process is lipid metabolism; the regulation of different lipid metabolism genes caused by chronic exposure to UV is down.

Melasma is one of the most common pigmentary disorders on the face characterized by pigmented symmetrical macules. This more often affects reproductive-age women with darker complexions, and has a major effect on quality of life. Melasma pathogenesis is complex and involves a variety of risk factors including genetic predisposition, UV exposure, darker phototype and hormonal influence. Because of its chronic and relapsing nature, as well as the fact that, despite various available treatment modalities, no single treatment approach has proved successful for all melasma patients, the treatment remains a challenge. This paper reviews the existing literature on melasma treatment and presents the findings of a study testing a new promising topical formulation based on resorcinol with a better efficacy and safety profile than other currently available melasma treatment options.

Keywords: Melasma; Pigmentary Disorders; Resorcinol; Melasma Treatment

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