



# DERMASCOPE

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Ethnic Skin

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# Customizing Treatment Pathways for Ethnic Skin

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**T**raditional dictionary definitions of the word 'ethnic' refer to those who originate from non-western cultures. The word has also been used to describe people from cultures or nations different from where they reside. The U.S. is unique in that we are genuinely a melting pot. As a result, using the color or Fitzpatrick skin type of a patient to identify ethnicity may lead to incorrect treatment selection. Understanding the intricate variances that exist between the structure and function in the skin of people from differing geographic regions in the world is one important key to a successful treatment. Truly most Americans are 'ethnic' as we have parents from disparate hereditary backgrounds that over generations have migrated between a wide range of countries. There are specific conditions and predispositions that are unique to lighter skin that can be present in a multiracial Fitzpatrick five patient. Conversely a patient with light skin may have a high tendency toward hyperpigmentation if their ancestry is mixed.





Upon deeper investigation, it becomes clear that color is only one of the important differences between the range of Fitzpatrick types. By identifying the key predispositions of skin from particular regions in the world, we can create tools to piece together the complex and unique identity of each patient's skin and therefore create successful treatment pathways. This includes using detailed patient history forms that identify heredity and conditions they may be combating. As the largest organ in the human body and the main source of protection and toxin elimination, a full and deep understanding of the influence heredity exerts on skin function is imperative when designing customized treatment plans for all of your patients.

#### The Skin as an Accommodating Organ

Our skin is integral to the proper function of our bodies. It regulates body temperature, retains moisture, and protects our DNA. In order for the skin to effectively perform these functions, over generations it has adapted to fend off the most damaging environmental culprits of a particular regional climate. This generational accommodation allows the skin to protect the ever-important DNA and therefore the body's ability to repair itself, minimizing the occurrence of disease and cancer. Ultraviolet radiation remains one of the worst threats for the health of the skin. In areas of the globe where this ultraviolet radiation is consistently more intense, the process of melanogenesis is more easily stimulated. As a result, people who originate from equator regions of the world where the UV radiation is extreme, naturally have darker skin. This is as a result of the quantity as well as the quality of the melanin in their skin. The skin of those whose ancestors were consistently exposed to low amounts of UV radiation deposits less melanin resulting in lighter colors of skin, hair, and eyes. These

cold, harsh climates also lead to the development of a thicker adipose layer to protect the body from loss of heat and more skin redness due to stressed capillaries. These consistently cold climates also are thought to lead to tighter pores in Fitzpatrick's one and two, which explains their ability to tolerate more surface stimulation. This all adds up to



more protected nerves in the dermis and an ability to tolerate increased surface stimulation. These environmental and geographic indicators are important to identifying the common predispositions of patient's skin, and in outlining the best treatment plan.

#### More Than Meets the Eye

The most apparent difference in the skin of those from different ethnicities is of course the color, although there are also differences in skin thickness, vascularity, and predispositions to certain skin conditions and diseases. What lies beneath the surface of the skin is equally as important as what is visible on the surface when determining effective treatment pathways for your patients.

Higher Fitzpatrick skin types are thought to have 22 layers in their

epidermis while that of lighter skin typically has 17. Additionally, transepidermal water loss (TEWL) tends to be greater in African American skin. The exposure to high heat and humidity in equator regions of the world may also be a reason for darker skin types having larger pores. This, in tandem with increased TEWL and a more compact and thicker dermis is thought to contribute to an amplified sensitivity to topical stimulation (e.g. peels) as there is inadequate protection of nerve endings.

The sebaceous glands tend to be larger in African American skin leading to a greater likelihood of acne breakouts. Interestingly, there also tends to be more inflammation around typically non-inflammatory comedones in higher Fitzpatrick skin. We expect all Fitzpatrick skin types with acne grades three and four to have inflammation and redness, but not grades one and two. The fact that superficial blood vessels are more prominent and dilated in darker skin may play a role in this increased inflammation. It is important to be aware of this tendency, as it may be beneficial for darker skinned patients with lower grades of acne to be referred out to a physician earlier for antibiotic therapies than patients with light complexions. Antibiotics help reduce not only bacterial proliferation, but are also very beneficial for the reduction of inflammation. Customized acne daily care regimens for darker skin should include anti-inflammatory botanicals and ingredients like azelaic acid that acts as a competitive inhibitor of DHT, which reduces the hormonal component of acne while reducing the occurrence of post-inflammatory hyperpigmentation.

#### Pigmentary Variances

Melanin is the complex molecule that is responsible for the deposition of pigment in our bodies. Melanin acts

as a photo-protectant that reduces UV penetration into the skin. Those with dark and light skin have the same number of melanocytes (the cells responsible for melanogenesis or pigment production), although their level of activity differs. As mentioned earlier, the dark skin of those who typically originate from regions of the world with extreme sun exposure, have melanocytes that will, out of necessity, start the process of melanin deposition much faster than someone with lighter skin. Those with mixed heritage may have lighter skin but still have a greater predisposition for hyperpigmentation than a typical Fitzpatrick one or two.

As a result of inflammation, the following process is stimulated:

- An enzymatic reaction results in melanosome production within the melanocyte.
- These melanosomes are 'packets' of pigment that can either be eumelanin (brown/black pigment) or pheomelanin (orange/red pigment).
  - Dark skin will tend to have more eumelanin. This more vigorous type of melanin contributes to the increased occurrence of hyperpigmentation.
  - Those with fairer skin and especially red hair will have predominantly pheomelanin.
- Once the melanosomes are produced, they move along the dendrites of the melanocyte where they are deposited into the keratinocytes.
- The melanosomes then travel through the keratinocyte, finally congregating in an umbrella-like configuration over the nucleus of the cells

affected by the UV radiation or inflammation to protect that cell's DNA from damage. A tan is the body's way of protecting us against DNA damage from UV exposure if we don't protect ourselves with sun avoidance and SPF products.

- The final color of the skin will be slightly different based on the ratio of eumelanin to pheomelanin as well as the quantity of sustained UV exposure to which someone's skin is subjected.

To avoid stimulating pigment deposit, it is wise to use lower percentages of ingredient blends that prevent melanogenesis rather than one ingredient at a high percentage that can be surface stimulating. Hydroquinone (HQ) is very effective at the low OTC percentage of two percent, especially when used in concert with other effective ingredients like lactic acid, kojic acid, ascorbic acid, and azelaic acid, to name a few. Care must be taken when using HQ at four percent or higher on darker skin as these are more irritating and can trigger post-inflammatory hyperpigmentation (PIH). In addition, therapies such as Retin-A<sup>®</sup> (retinoic acid) must be used with caution as inflammation can trigger both hypo- and hyperpigmentation in dark skin. A safer alternative is retinol. This member of the retinoid family is not surface irritating and is converted to retinoic acid within the skin on an 'as needed' basis. All patients working to overcome hyperpigmentation will benefit greatly from gentle blended chemical peels that increase cell turnover and remove surface darkened cells without the excessive inflammation that can stimulate melanin production.

Over generations the Nordic or lighter skin types developed melanocytes

that are much less responsive than those with darker skin, as the need for protection from UV radiation is less necessary. It is thought that as a result of this, these melanocytes are also less capable of repairing themselves and regenerating after damage. This inability to repair can lead to melanotoxicity or hypopigmentation. This cannot be corrected and happens typically from procedures that involve full thickness burns such as cryotherapy or CO<sub>2</sub> laser. Hypopigmentation lesions can be thought of as a pigmentary scar and although not as common as hyperpigmentation, it is more disfiguring, traumatic, and typically permanent.

One of the most important steps in any daily care regimen is sun protection. A broad-spectrum moisturizer with an SPF of 15 or greater should be applied every day to all exposed areas. Although darker skin has more natural protection against UV exposure this is a step that cannot be omitted.

#### Identifying Rosacea

Another skin condition that is tied to hereditary background is rosacea. This is a chronic condition or disorder of the skin that is known to primarily affect the central third of the face (cheeks, nose, and central forehead). It is characterized by flushing and persistent redness, papules or pustules, and telangiectasia which can be controlled, but never cured. It is seen most frequently in women between the ages of 30 to 50, however can affect men more destructively.

Rosacea is most prevalent in those of English, Irish, Welsh, Russian, and



Native American descent. This is a condition that could easily be missed if the patient has dark skin but mixed heritage. Although African American skin has more dilated superficial blood vessels, rosacea is not as common in this type of skin. If rosacea is not identified and the higher Fitzpatrick skin type is mistakenly treated for acne the condition will likely worsen. One way to uncover whether a dark skinned patient has acne or rosacea is to ask if they typically have irritated eyes or have a high incidence of styes. These are signs of ocular rosacea, which occurs in at least 50 percent of all rosacea patients.

It is difficult to identify the specific reasons rosacea affects particular hereditary backgrounds as there is no clear definition or etiology of the disease. One helpful advance in diagnosis and treatment was the introduction of the standard classification system developed by the National Rosacea Society. This four subtype classification system allows physicians and clinicians to have a common language in identifying this difficult condition. To view this document, please visit [www.rosacea.org/class/index.php](http://www.rosacea.org/class/index.php).

In order to mitigate the symptoms and keep rosacea from progressing, it is important to use gentle ingredients that interfere with the growth factors, prostaglandins, and cytokines responsible for the vascular issues that drive the redness. Specific algae extracts, caper bud extract, bisabolol, evening primrose and borage oils, as well as azelaic acid have all shown great promise at controlling this condition. Azelaic acid is available by prescription at 15 to 20 percent and is very effective. Again, gentle blends of multiple ingredients at lower percentages are extremely successful and non-irritating. Gentle antibacterial agents, like low percentage salicylic acid, are beneficial, especially for the papulopustular presentation.



#### Putting Together the Puzzle for Success

As the planet becomes more and more of a melting pot and world travel and communication increase, the incidence of a patient having one pure hereditary lineage will become increasingly unlikely. Because of the many combinations of races and cultures in most of us there cannot truly be one 'ethnic' skin treatment. Understanding the different hereditary influences in each person's skin will allow the technician to identify potential conditions and risks to treatment. The ultimate success of any treatment plan is greatly increased by basing treatment on each 'ethnic' patient's unique combination of heredity.



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