# ChromaWhite TRx

A new era in brightening from the skin health experts.

## education

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This past decade has seen an enormous surge in popularity of skin brightening products formulated specifically to treat hyperpigmentation and increase skin luminosity. Traditionally, these products were popular in Asian-Pacific and African regions, but the demand for brightening products is gaining momentum across the globe. Currently, the Asian market leads the world in the number of products on the market to treat pigmentation issues; Asia alone accounts for 37% of the overall worldwide sales in this category. Undoubtedly, as the global population continues to age and years of sun damage, compounded by the influence of fluctuating hormones, manifests itself as uneven pigmentation, this category will continue to increase worldwide. Market research studies indicate that an uneven skin tone (as in hyperpigmentation and hypopigmentation) is perceived as “aged skin” while a more even skin coloration is judged to be “healthier and more youthful.” Today’s consumer is not only looking to treat hyperpigmentation (also known as “age spots”), but to create a more even skin tone with enhanced luminosity.

Consumer demand for brightening products has spurred both pharmaceutical and cosmetic companies to research and develop new technology and products that are not only effective, but safe to use. As professional skin therapists, our focus must also be on seeking out products that are safe and effective for brightening the skin without causing irritation or damage which can lead to premature aging or worse. At The International Dermal Institute, we have studied and updated our understanding of the underlying causes of hyperpigmentation, and subsequently created products containing the newest ingredient technology for the most effective, safe treatment of hyperpigmentation.
Skin color is mainly determined by the amount of melanin present in the skin. Constitutive skin color is the basic melanin content of our skin that is genetically inherited without any influence from sun exposure or hormones. Facultative skin color is the result of other influences, such as sunlight and hormones, and their impact on our skin color. When The International Dermal Institute discusses the treatment of hyperpigmentation, we are referring to treating facultative skin color or pigmentation that results from exposure to ultraviolet rays.

Melanocyte

Melanin, the brown or reddish pigment in skin, is synthesized in dendritic cells called melanocytes. Regardless of race, we all have approximately 800 to 1000 melanocytes per square millimeter of epidermis. Melanocyte cells look like an octopus with long arms, or dendrites, extending upward into the stratum spinosum layer. Melanocytes in sun exposed skin are larger with branched dendritic arms when compared to those found in protected skin. When exposed to UV light the pituitary gland in the brain generates a melanotropin called alpha Melanin Stimulating Hormone ($\alpha$-MSH) or beta Melanin Stimulating Hormone ($\beta$-MSH). This melanotropin molecule binds to a specific receptor site (MC1-R) on the melanocyte, signaling melanin formation to commence. (This receptor site is also affected by hormones such as estrogen which accounts for the influence that hormones have on melanin formation.) $\alpha$-MSH not only stimulates pigment formation but it also triggers the inflammatory and immune response.
Likewise, inflammatory modulators that trigger the immune response from the skin’s langerhan cells also trigger melanogenesis. Hence, what was once called an epidermal-melanin unit is now more accurately called the keratinocyte-langerhans-melanocyte complex.

Once the melanocyte is activated, eumelanin (brown-black melanin) formation commences. The melanin pigment is bound to a protein matrix and contained in an oval-shaped structure known as a melanosome. After the melanosome is produced in the melanocyte, it is transferred to a neighboring keratinocyte cell where it begins its journey through the different layers of epidermis while contributing to the skin’s color.

Regardless of skin color, the number of melanocytes does not vary among humans. There is approximately one melanocyte for every 36 keratinocytes found in the epidermis. The amount of melanin, the type of melanin produced (whether it is eumelanin or phaeomelanin), the size of the melanosomes and the distribution of melanosomes in the epidermis all contribute to the skin’s color and intensity (the lightness or darkness of the skin). In black skin, we not only see larger melanosomes with more melanin present, but more of them. They are seen as larger, individual, jelly bean-like structures surrounded by a membrane, whereas melanosomes in Caucasian, Asian and Hispanic skin are smaller, vary in size and shape, and have many smaller melanosomes clustered in a single membrane jacket.

Causes of Hyperpigmentation: UV Exposure

While the amount of melanin synthesized in our skin is determined by our genetics (constitutive skin color), there is an overriding effect of the environment, such as exposure to UV radiation, which determines skin pigmentation levels (facultative color). Due to its ability to absorb UV radiation, the primary function of melanin is believed to be to protect the cells/skin from sunlight. Upon exposure to UV radiation, melanin synthesis is stimulated, resulting in a characteristic tan. Studies have shown that exposure to UV causes melanosomes to actually cluster, forming a protective cap over the nucleus of the cell. In addition to the development of an overall tan, exposure to UV light may also stimulate hyperpigmentation in specific spots on the hands, face and neck. These dark spots are often referred to as age spots or liver spots (lentigines) and are merely an annoyance. Age spots usually become evident in our early forties and become increasingly more evident as we age. By the time we reach 60 years old, 90% of all individuals will have sun-induced age spots, known as lentigines.
Lentigines are harmless, flat, brown discolorations of the skin that range in size (from 2 mm-30 mm). These spots, more than anything else, give away a person’s age. Age spots are caused by the skin being exposed to the sun over many years, and unlike freckles, they do not fade in winter. Freckles, also known as ephilides, are flat spots that are red or brown, typically appear during the summer months and fade in winter. They are most often found in individuals with fair skin and are generally a genetic trait. Both freckles (ephilides) and age spots (lentigines) look very similar to the naked eye. Short of monitoring their color intensity in the summer versus winter months, the only way to distinguish the two is to look at a section of the skin under a microscope. Lentigines display flattened rete ridges (the finger-like projections found at the interface between the epidermis and the dermis) and have noticeable pigmentation in the Stratum basale layer. There are also more melanocytes in the region. Freckles do not show any change to the rete ridges and have a normal population of melanocyte cells.

Because light colored skin has less melanosomes, less melanin and lower levels of eumelanin than darker skin, there is less protection against exposure to UV radiation. Likewise, in individuals with lighter skin, the majority of the melanin is confined to the lower layers of the epidermis; in darker skin, the melanin is evident throughout the layers of the epidermis. The darker the skin, the greater the incidence of melanin in the outermost layers of the Stratum corneum. It is believed that the enzymatic process whereby the usual protein/melanin complex is broken down as it transitions through the epidermis during keratinization is not as active in dark skin. This is most likely part of the protective role that melanin plays in the skin. While it stands to reason that darker skin would be easier to treat due to the melanin being closer to the surface of the skin, the overall abundance of melanin in dark skin actually makes it more difficult to treat. Do not think for one minute that dark skin with its preponderance of melanin is exempt from the ravages of UV exposure. It may be better equipped to protect itself, but it is still vulnerable to sun-induced hyperpigmentation as well as post-inflammatory hyperpigmentation, photodamage and skin cancer.
In order to understand how we can effectively treat hyperpigmentation we need to review how melanin is made in the skin. The process of melanin production is known as melanogenesis. The production of melanin by the melanocyte is a complicated biosynthetic pathway which starts with a key amino acid, Tyrosine. There are many chemical reactions that take place, some involving co-factors that must be present in order for the reactions to occur. The most critical steps in the biosynthesis of melanin appear to be the first two steps that are mediated by the enzyme Tyrosinase, a copper containing enzyme that catalyzes two distinct reactions in the production of melanin. Up until very recently, most of the ingredients used to fight pigmentation have targeted these first two steps in melanin synthesis. Let’s look at the reactions in more detail.

The production of pigment within the melanocyte is a multi-step process. The first step, mediated by the enzyme Tyrosinase, involves the conversion of the amino acid Tyrosine to L-DOPA. In the second step, L-DOPA, is converted to Dopaquinone, a dihydroxybenzene derivative; this step is also mediated by the Tyrosinase enzyme but it now requires Copper as an enzyme co-factor. Once Dopaquinone is made, the biosynthetic pathway splits and several subsequent reactions lead to either eumelanin, the brown and black melanin, or phaeomelanin, the yellow and red melanin pigments. Eumelanin is a brown-black pigment, and most common pigment that we see in the skin. The content and intensity of this pigment will give an indication of the degree of photoprotection.

Pheomelanin is the yellow-red pigment that we see in fair skin and red hair. It is synthesized from Tyrosine and the amino acid Cystine, meaning it is less stable to ultraviolet light. Consequently, pheomelanins oxidize more readily, which explains why red hair is relatively rare. This type of melanin offers no photoprotection to the skin. Scientists are continually studying the biosynthetic pathway of melanin in an effort to better understand and control the process of melanin formation.
In addition to genetics and environmental influences, skin pigmentation is effected by endocrine (hormonal) factors, usage of prescription drugs, stress, topically-applied products including cosmetics, and wound healing to the skin tissue. The latter incidence gives rise to post-inflamatory hyperpigmentation (PIH), a phenomenon that is more problematic for individuals with darker skin color. PIH stems from the melanocytes exaggerated response to injury, however slight, which results in an increased or abnormal distribution of melanin in the tissues. Interestingly, melanocyte activity is stimulated by the same inflammatory mediators that are activated when the skin’s immune response is activated. What effects the skin’s Langerhans cells generally will stimulate the melanocytes, and vice versa. When inflammation subsides, the inflammatory mediators revert to normal levels, and so does the production of melanin. In due course, the cells causing hyperpigmentation rise to the Stratum corneum and slough-off, causing the hyperpigmentation to disappear. Recent studies have shown however, that depending on the depth of the inflammation or wound, hyperpigmentation cannot only be evident in epidermal cells but in the dermis as well. This may account for the difficulty in treating post-inflamatory pigmentation associated with deeper scar tissue.
Hormonally induced pigmentation manifests itself in various forms, such as hyperpigmentation spots and melasma, better known as the mask of pregnancy. Melasma affects primarily women of child-bearing age. Some studies suggest that up to 75% of women may develop melasma during pregnancy and about 33% of women on birth control pills also complain of this problem. It is more prevalent in women with darker skin color and it is most commonly seen in areas that are exposed to sunlight. Some scientists say UV exposure seems to be a requirement for melasma to develop, which may account for the fact that it is less noticeable in winter months when UV exposure is lower. Melasma is seen as an irregularly shaped patch of hyperpigmentation ranging from light brown to dark brown. The most common pattern is the centrofacial: on the chin, upper lip, cheeks, nose, and forehead. To a lesser extent, melasma is seen on the cheeks and nose, or on the jawline.

The name “mask of pregnancy” points to its frequent occurrence during pregnancy or when oral contraceptives are taken. It is thought that estrogen and UV light seem to be the biggest culprits in this condition. The hyperpigmentation may be permanent or disappear and re-appear with subsequent pregnancies or use of birth control pills. Although melasma is evident during pregnancy, it can also appear as the result of some ovarian disorders. It is believed that both estrogen and progesterone influence melanocyte activity, driving the production of melanin. When compared to melanocyte activity that is stimulated by sun exposure, hormonally induced melanocytes are considered to be hyperactive. Hormonally induced melanin may be confined to the epidermis but it may also be found in the dermis, making treatment especially difficult. Once hormonal fluctuations subside, such as the end of pregnancy or discontinuance of hormone supplements, or birth control pills, the hyperpigmentation often disappears. However, the condition may persist up to 5 years after pregnancy or stopping of birth control pills. Unfortunately, once melasma manifests in skin, chances of having it again increase. To complicate matters, the melanin may reside in both the dermis and epidermis, which accounts for why it is so difficult to treat (treating the dermal component is practically impossible with topically-applied products).
how can hyperpigmentation be controlled?

The most obvious means of controlling pigmentation, especially sun induced, would be to regularly apply a broad-spectrum sunscreen with a minimum SPF of 30. This will help control future pigmentation, even when pigmentation is hormonally induced, as exposure to UV is a contributing factor in hormonally induced hyperpigmentation (melasma) as well. But what about existing hyperpigmentation?

For years, Hydroquinone, classified as an over-the-counter drug in the United States, and has been used in concentrations up to 2% within products designed to lighten skin. While Hydroquinone may be a popular pigment lighter, there are many concerns regarding its safety.

It has been estimated that one third of the population is allergic to Hydroquinone. Serious contact dermatitis has been noted and skin may be photosensitized with prolonged use. Hydroquinone has been classified as “an extreme sensitizer.” In some cases, a condition known as onchronosis can result, leading to hyperpigmentation and acne-like lesions. Others report hypopigmentation results when used on an olive skin color. The Occupational Safety and Health Administration in the USA states that Hydroquinone is “mutagenic and has cancer causing potential.” The Addendum to the Final Report on the Safety Assessment of Hydroquinone published in the Journal of the American College of Toxicology in 1994 concludes that Hydroquinone is a potent cytotoxic agent that causes mutations and alterations to DNA, and that it should not be used in any leave-on type of product; it is safe for rinse-off products when used in concentrations less than 1%. Remember, most OTC products marketed to lighten pigmentation use Hydroquinone at a 2% concentration. Based on the results of these studies, it is no surprise that the use of Hydroquinone has been banned in many countries throughout the world.

In the USA, products formulated to lighten pigmentation are classified as over-the-counter drugs and must be in compliance to Federal Monographs that dictate what ingredients and claims may be made. As of 2008, Hydroquinone is the only ingredient recognized as a lightening agent by the US FDA. Consequently, any other ingredient used to lighten skin must be referred to as a brightening agent and not a lightener. In the past, Hydroquinone has fallen out of favor and even been banned in most of the world, and there has been an onslaught of alternative brightening agents that are now marketed to combat hyperpigmentation.

In 2007, the USA Food and Drug Administration (FDA) reported that it intended banning the use of Hydroquinone in non-prescription products (due to safety issues) but to date, no new regulations have been implemented.
Melanocyte
Dendritic cells that synthesize Melanin, the brown or reddish pigment in skin.

Hyperpigmentation
Facultative skin color or pigmentation that results from exposure to ultraviolet rays, hormones, pregnancy, medications and inflammation.

Post-Inflammatory Hyperpigmentation
Hyperpigmentation that appears after inflammation of the tissue; could be from wounds, acne or contact dermatitis.

Melasma
Hormonally induced pigmentation, either from pregnancy or birth control pills; often called “the mask of pregnancy.”

α-MSH
Alpha Melanin Stimulating Hormone, stimulating pigment formation and the inflammatory and immune response.

β-MSH
Beta Melanin Stimulating Hormone, binding to the melanocyte, signaling melanin formation.
At The International Dermal Institute, we have studied the various mechanisms that are known to impact melanin formation. We know that we can control the process by influencing different steps along the pathway. Perhaps the best-studied step involves that of the Tyrosinase enzyme. For years, scientists have been looking for ways to regulate this enzyme and therefore, slow melanin formation. One can regulate Tyrosinase by either slowing down its activity or competing for its substrates, either Tyrosine (see step 1) or L-DOPA (see step 2).

**Melanin Chemical Pathway**

Rice Extract is an example of an agent that controls Tyrosinase activity. The Phytic Acid found in Rice binds the Copper metal ion, slowing down step two of the Tyrosinase mediated reaction. Kojic Acid, Aspergillus (a fungus) Ferment, Rumex Extract and Ergothioneine (a plant amino acid) are other examples of Tyrosinase inhibitors that chelate, or bind, Copper. Newer ingredients, such as Hydroxycinnamic Acid, Gluconic Acid and Zinc Glycinate also chelate Copper to control Tyrosinase activity. Of particular interest is Zinc Glycinate, which stimulates synthesis of an antioxidant protein called Mettallothionein that binds the Copper, stopping step two in the pathway. In addition, it has been shown to reduce Tyrosinase synthesis and activity and suppress melanocyte growth factors that stimulate melanin synthesis.

Many botanical extracts have been studied for their ability to inhibit Tyrosinase. These include Sophora Angustifolia, Actinidia Chinensis (Kiwi) Fruit, Nasturtium, Rumex (Yellow Dock), Phyllanthus Emblica Fruit, Morus Alba (Mulberry), Arctostaphylos Uva-Ursi (Bearberry), Glycyrrhiza Glabra
(Licorice) and more recently Ferula Foetida (Giant Fennel). While the precise mechanism of how these work is not clearly understood, studies have been conducted looking at the flavonoid components of these plants and their similarity in chemical structure to L-DOPA. These flavonoids are dihydroxybenzene derivatives, which are thought to compete with the substrate in either of the Tyrosinase mediated steps. Many of these botanical extracts may in fact work on two fronts – not only do they inhibit the Tyrosinase enzyme but they compete with the enzyme’s substrate (Tyrosine or L-DOPA).

A different approach to controlling pigmentation is illustrated with the use of Yeast Extract, which has been studied for its ability to shunt melanogenesis toward the lighter phaeomelansins. This gives the perception of a lighter pigmentation although actual production of melanin is really not turned off.

While the use of hydroxy acids (Lactic Acid, Glycolic Acid and Salicylic Acid) in skin brightening products has generally been utilized to accelerate desquamation and removal of pigmented keratinocytes, it has recently been shown that a 5% concentration of Lactic Acid will inhibit the formation of the Tyrosinase enzyme, thereby slowing the process of melanin synthesis. This new approach to affecting melanin synthesis is unique to Lactic Acid and does not occur with other alpha hydroxy acids such as Glycolic Acid or the beta hydroxy acid Salicylic Acid. Other exfoliating agents used in brightening products include Pumpkin enzyme, Sutilains (a protease enzyme), Lactobacillus Ferment and Galactoarabian, a molecule that stimulates natural desquamation in the skin.

Kojic Acid at up to 1% concentrations has also been used to treat hyperpigmentation; its ability to bind the Copper metal and inhibit the Tyrosinase enzyme accounts for its effectiveness. However, best results are obtained in an anhydrous base (no water) which is not generally how it is marketed. Recent studies on Kojic Acid show that topical application may induce contact dermatitis and that it has a high sensitizing potential; hence it is banned in some countries.

Another means to control hyperpigmentation is to control inflammation. Using anti-inflammatory agents such as Glycyrrhiza Glabra (Licorice) Root Extract, Camellia Sinensis (White Tea) Extract and Morus Alba (Mulberry) Root Extract will help address the connection between inflammation and pigment formation. These extracts also may act as antioxidants, slowing many of the oxidation steps involved in melanogenesis.
More recently scientists have been studying the use of other agents to control melanin formation. Niacinamide has been shown to stop the transfer of melanosomes to neighboring keratinocytes. Other agents, such as Glucosamine and Dithiooctanediol, have been shown to stop the activation of the Tyrosinase enzyme, a step that involves glycosylation or the addition of a sugar molecule to the inactive pro-enzyme structure converting it to the activated enzyme. If the enzyme remains inactive, melanin formation ceases. At the American Academy of Dermatology meeting held in 2006, a group of scientists reported superior lightening effects on hyperpigmentation when Niacinamide was combined with Glucosamine.

Newer research indicates that we can also control melanin formation by affecting the signaling process involved in melanin biosynthesis. We can impact the messengers that signal melanin synthesis by using sunscreens and anti-inflammatory agents. Newer, state-of-the-art ingredients such as Ascophyllum Nodosum (a brown seaweed extract) has been shown to inhibit endothelin-1 (ET-1), a molecule synthesized and released from the keratinocytes after UV exposure. ET-1 stimulates melanocyte proliferation and dendritic length as well as Tyrosinase activity in melanocytes. By inhibiting the signal molecule ET-1 we can therefore inhibit melanin formation. Likewise, the use of Palmaria Palmata, a red algae, has been shown to inhibit the release of Stem Cell Factor (SCF), another signaling molecule released by keratinocytes upon exposure to UVB radiation. SCF binds with a receptor on the melanocyte, activating the melanocyte. Palmaria Palmata inhibits the release of SCF and therefore inhibits melanocyte activation; in addition, it inhibits Tyrosinase activity and the synthesis of the protein anchoring complex required for transfer of melanosomes to keratinocytes.

Ascorbic Acid (Vitamin C) has been used for many years to control melanin synthesis. Newer stabilized derivatives of Vitamin C, including Magnesium Ascorbyl Phosphate, Ascorbyl Glucoside and Tetrahexyldecyl Ascorbate, are used to control melanogenesis. These derivatives can scavenge free radicals that cause erratic melanocyte activity as well as act as antioxidants inhibiting oxidation steps along the biosynthetic pathway (i.e., DOPA to Dopaquinone) of melanin. They have also been shown to inhibit Tyrosinase synthesis and activity. Finally, the newest agents to fight melanin formation are the peptides. Oligopeptide-34 is a state-of-the-art synthesized peptide that has been shown to decrease α-MSH activity and inhibit Tyrosinase activity. While the mechanism is not clearly understood, results indicate that it brightens skin, especially sun-induced hyperpigmentation, in half the time when compared to other brightening complexes.
Melanin Chemical Pathway

Melanin
Brown or reddish pigment in skin.

Tyrosinase
The enzyme that triggers step one and step two in melanin formation.

Tyrosine
The amino acid that is converted to L-DOPA by the Tyrosinase enzyme in step one of melanin formation.
For the past five years at The International Dermal Institute we have focused our research on understanding the intricacies behind melanin biosynthesis and have investigated every new lightening agent available to the cosmetic chemist. ChromaWhite TR<sub>x</sub> is the result of this extensive research effort and represents a complete system for addressing hyperpigmentation. ChromaWhite TR<sub>x</sub> is not just a pigment-lightening product range; it encompasses an entire system of products that is designed to optimize results by prepping the skin, preventing hyperpigmentation and protecting skin from future pigmentation issues, all without compromising skin health. Our clinical evaluations have demonstrated that prepping by exfoliating the pigmented area and protecting by shielding skin from further UV-induced pigmentation are as critical of steps as actual treatment when working to correct hyperpigmentation.

The ChromaWhite TR<sub>x</sub> system

- **Tri-Active Cleanse**
  - retail and professional
- **Powerfoliant<sup>2</sup>**
  - retail
- **C-12 Concentrate**
  - retail
- **Extreme C**
  - retail
- **Pure Light SPF30**
  - retail and professional
- **Pure Night**
  - retail
- **ChromaWhite TR<sub>x</sub> Complex**
  - professional
Vitamin C (Ascorbic Acid, Magnesium Ascorbyl Phosphate, Tetrahexydecyl Ascorbate or Ascorbyl Glucoside)
Helps brighten surface spots, helps control oxidation.
Tri-Active Cleanse, Powerfoliant, Extreme C, Pure Light SPF30, Pure Night

Camellia Sinensis (White Tea) Extract
An antioxidant; helps control oxidation; helps accelerate skin brightening and strengthens skin’s defenses against future discoloration on a cellular level.
Tri-Active Cleanse, Extreme C, Pure Light SPF30, Pure Night

Ferula Foetida (Giant Fennel) Root Extract
Slows enzyme activity inhibiting melanin formation. Helps brighten skin.
Tri-Active Cleanse, Powerfoliant, ChromaWhite TRx Complex

Gluconic Acid
Chelates Copper, inhibiting melanin synthesis.
Pure Night

Glycyrrhiza Glabra (Licorice) Root Extract / Dipotassium Glycyrrizhate
An antioxidant; helps scavenge free radicals and fight melanin formation.
Powerfoliant, Pure Light SPF30, Pure Night

Lactic Acid
Exfoliates to help lift dulling, discolored skin cells to improve surface clarity. At high concentrations, inhibits formation of Tyrosinase enzyme.
Tri-Active Cleanse, Powerfoliant
Lactobacillus/Citrus Medica Limonum Peel Ferment
Helps exfoliate surface cells to smooth, enhance skin tone and eliminate dark spots.
Powerfoliant, ChromaWhite TRx Complex

Lactobacillus/Pumpkin Fruit Ferment Filtrate
Helps exfoliate surface cells to smooth, enhance skin tone and eliminate dark spots.
Powerfoliant, Extreme C, Pure Light SPF30, Pure Night, ChromaWhite TRx Complex

Niacinamide
Helps prevent transfer of melanosomes to keratinocytes, minimizing color deposits.
Tri-Active Cleanse, Powerfoliant, Extreme C, Pure Light SPF30, Pure Night, ChromaWhite TRx Complex

Oligopeptide-34
A proprietary peptide that reduces α-MSH activity, inhibits Tyrosinase activity and melanosome transfer to cells. Helps prevent cellular discoloration for unsurpassed skin brightening.
C-12 Concentrate, Pure Light SPF30, Pure Night, ChromaWhite TRx Complex

Phytic Acid (Rice Extract)
Chelates Copper, inhibiting step two of melanogenesis.
Tri-Active Cleanse, Powerfoliant, C-12 Concentrate, Pure Night, ChromaWhite TRx Complex

Zinc Glycinate
Stimulates formation of an antioxidant protein that binds Copper, thereby inhibiting Tyrosinase.
C-12 Concentrate, Extreme C, Pure Light SPF30, Pure Night, ChromaWhite TRx Complex
new! products ChromaWhite TRx
Hyperpigmented skin and uneven skin tone.

A triple-active concentrated cleanser that improves surface clarity, lifts dulling skin cells and prepares skin for maximum penetration of our unique complex of enzymes, peptides and active brighteners. Skin is left feeling ultra clean and conditioned.

- Deep cleans and preps skin for optimum penetration of brightening agents.
- Removes dulling surface cells for improved skin clarity.

- Lactic Acid lifts dulling, discolored skin cells to improve surface clarity.
- Ascorbyl Glucoside (Vitamin C), Glycine Soya (Soybean) Seed Extract, Morus Alba (Mulberry) Root Extract and Ferula Foetida (Giant Fennel) Root Extract help brighten surface spots.
- Antioxidant Camellia Sinensis (White Tea) Extract and Ascorbyl Glucoside (Vitamin C) control oxidation critical to skin brightness.
- Niacinamide helps minimize color deposits into new cells for improved luminosity.
- Butyrosperum Parkii (Shea Butter) and Hyaluronic Acid provide critical moisturization.

continued on next page
1. Perform the Dermalogica Double Cleanse that begins with PreCleanse.
2. Dispense a small amount of Tri-Active Cleanse onto dampened hands and work into a light lather.
3. Apply to dampened face and throat, massaging with light, upward strokes for at least 30 seconds, avoiding the eye area.
4. Rinse thoroughly with warm water.
5. Use Tri-Active Cleanse once or twice a day depending on skin sensitivity. Follow with C-12 Concentrate, Extreme C, and Pure Light SPF30 during the day or Pure Night in the evening.

Note: Upon beginning second cleanse with Tri-Active Cleanse, steam may be used to facilitate the cleansing process by further softening the skin.

2. Lightly lather Tri-Active Cleanse and apply with a flowing effleurage, spreading movement over the entire face, throat and upper décolleté, avoiding the eye area. Ensure slip-and-glide by combining with water or customizing with Replenishing Botanical Mixer.
3. The routine should commence with rhythmic roll-patting stokes, paying careful attention to areas of congestion and hyperpigmentation.
4. Damp sponges, a steam towel customized with Replenishing Botanical Mixer or The Sponge Cloth can be used to remove all traces of cleanser.
Hyperpigmented skin and uneven skin tone.

Remove dulling surface cells and help maximize the absorption of brightening treatments with this potent, two-part powder-liquid system that activates when combined.

- Removes dulling surface cells to help maximize absorption of brightening treatments.
- Dramatically smooths and brightens skin.
- Dual-chamber delivery system ensures maximum potency and freshness upon activation for unsurpassed results.

- Lactobacillus/Pumpkin Fruit Ferment, Papain and Salicylic Acid help exfoliate surface cells to aid in brightening of skin.
- Lactic Acid, an alpha hydroxy acid, stimulates cell renewal and cell turnover while brightening the skin.
- Phytic Acid chelates Copper to inhibit Tyrosinase enzyme involved in melanin formation.
- Niacinamide inhibits transfer of melanosomes to keratinocytes.
- Ascorbyl Glucoside (Vitamin C), Ferula Foetida Root Extract, Glycyrrhiza Glabra (Licorice) Root Extract and Camellia Sinensis (White Tea) Extract brighten skin.

continued on next page
1. Perform the Dermalogica Double Cleanse that begins with PreCleanse and follows with Tri-Active Cleanse.

2. To activate, press firmly down on button in cap to release powder. Shake until powder and liquid are combined. Twist off cap, and twist applicator onto base. Pull to remove applicator cap.

3. Dispense 5-6 drops directly onto face and neck with fingertips, avoiding eye area, and gently massage over the skin until absorbed.

4. Allow to activate for 2-3 minutes and rinse thoroughly.

5. Reseal with applicator tip.

6. Follow with C-12 Concentrate, Extreme C, and Pure Light SPF30 during the day or Pure Night in the evening.

7. To reactivate upon next application, gently shake to combine ingredients. Use opened vial within 4 weeks. Use twice weekly after cleansing.

Avoid eye area. Do not use on skin that is sunburned, irritated, sensitive, has cuts or abrasions, or has recently been waxed.
Hyperpigmented skin and uneven skin tone.

A silky-rich, high-potency treatment that brightens, minimizes discoloration and improves skin clarity.

- Helps treat cellular discoloration.
- Velvety Silicones absorb quickly, conditioning skin and reinforcing barrier lipid layer.

- Oligopeptide-34 is a proprietary peptide that reduces Tyrosinase activity and melanosome transfer to cells.
- Zinc Glycinate stimulates formation of an antioxidant protein that binds Copper, thereby inhibiting Tyrosinase.
- Palmaria Palmata and Ascophyllum Nodosum inhibit Tyrosinase activity and transfer of melanosomes to keratinocytes. Stops the messenger that triggers melanin synthesis.
- Phytic Acid binds Copper to inactivate Tyrosinase.
- Exclusive blend of peptides, mineral amino acids and botanical extracts help treat and prevent cellular discoloration.

1. After cleansing, apply directly to areas of discoloration or all-over to even out overall tone.
2. Follow with Extreme C and Pure Light SPF30 during the day or Pure Night in the evening.
3. Use twice daily to improve skin tone and clarity.
Hyperpigmented skin and uneven skin tone.

A unique powder-to-emulsion treatment which delivers a high concentration of Magnesium Ascorbyl Phosphate (MAP) combined with brightening agents and exfoliants to optimize skin clarity.

- Accelerates skin brightening.
- Strengthens skin’s defenses against future discoloration.
- Silky emulsion glides gently over skin for efficient application.

- Magnesium Ascorbyl Phosphate (MAP), a non-acidic, stable form of Vitamin C, helps inhibit melanin formation.
- Antioxidant Camellia Sinensis (White Tea) Extract accelerates skin brightening and strengthens skin’s defenses against future discoloration on a cellular level.
- Zinc Glycinate stimulates formation of an antioxidant protein that binds Copper, thereby inhibiting Tyrosinase.
- Niacinamide and Glucosamine help prevent transfer of melanosomes to keratinocytes.
- Glucosamine, Algae Extract, Yeast Extract and Lactobacillus/Pumpkin Fruit Ferment help exfoliate surface cells to smooth, enhance skin tone and eliminate dark spots.

1. To use as a spot treatment, dispense a small amount onto fingertip and smooth directly over areas of pigmentation or uneven skin tone. May be applied under or over prescribed Dermalogica Moisturizer.
2. As an all-over treatment, mix a pea-sized amount into prescribed Dermalogica Moisturizer and apply to entire face and throat.
Hyperpigmented skin and uneven skin tone.

A medium-weight daytime treatment moisturizer that conditions and brightens skin while chemical-free sunscreens help defend skin against pigment-inducing UV light.

- Antioxidants and botanical extracts help guard against further pigmentation.
- Natural mineral UV-blockers protect against UVA and UVB photodamage.

- Exclusive blend of peptides, Ascorbyl Glucoside (Vitamin C), Zinc Glycinate and botanical extracts helps treat and prevent cellular discoloration for unsurpassed skin brightening and skin tone improvement.
- Niacinamide helps prevent transfer of melanosomes to keratinocytes.
- Physical sunscreens Titanium Dioxide and Zinc Oxide provide SPF30 protection against UVA and UVB exposure while enhancing skin luminosity.
- **UV Smart Booster Technology** with antioxidant vitamins C and E provide enhanced photoprotection and help prevent UV-induced pigmentation.
- Hyaluronic Acid hydrates skin tissue, helping to minimize fine dryness lines.

1. Following application of C-12 Concentrate and Extreme C, apply evenly and liberally to face, throat and neck, preferably 30 minutes prior to sun exposure.
2. Use as your daily moisturizer for year-round protection against sun damage.

1. Following application of Multi-Active Toner or Soothing Protection Spray, apply Pure Light SPF30 evenly to the face, throat and neck. Blend with fingertips to complete professional treatment.
Hyperpigmented skin and uneven skin tone.

A nourishing and brightening overnight treatment to brighten and help minimize surface spots while conditioning and hydrating skin.

- Helps treat and prevent cellular discoloration for unsurpassed brightening and skin tone improvement.
- Smoothes fine dryness lines while nourishing skin.
- Improves barrier protection against moisture loss and strengthens against environmental damage.

- Oligopetide-34, Vitamin C and Hydroxycinnamic Acid help prevent cellular discoloration for unsurpassed skin brightening.
- Gluconic Acid and Phytic Acid chelate Copper, inhibiting melanin synthesis.
- Zinc Glycinate stimulates formation of an antioxidant protein that binds Copper, thereby inhibiting Tyrosinase.
- Niacinamide helps prevent transfer of melanosomes to keratinocytes.
- Antioxidants Glycyrrhiza Glabra (Licorice) Root Extract, Camellia Sinensis (White Tea) Extract and Beta-Carotene help scavenge free radicals and fight melanin formation.
- Lactobacillus/Pumpkin Fruit Ferment and Sutilains help exfoliate skin and enhance skin luminosity.
- Simmondsia Chinensis (Jojoba) Seed, Vaccinium Macrocarpon (Cranberry) and Rubus Idaeus (Raspberry) Seed oils improve barrier protection against moisture loss and shield against environmental damage.

1. Cleanse with Tri-Active Cleanse and follow with C-12 Concentrate and Extreme C.
2. Apply Pure Night in the evening to entire face, throat and neck, concentrating on areas of dryness.
Hyperpigmented skin and uneven skin tone.

A super-concentrated brightening treatment containing our exclusive blend of peptides, minerals and botanical extracts to deliver actives to targeted areas, brightening and improving clarity.

- Concentrated brightening serum helps treat cellular discoloration and uneven pigmentation.

- Oligopeptide-34 is a proprietary peptide that reduces Tyrosinase activity and melanosome transfer to cells.
- Zinc Glycinate stimulates formation of an antioxidant protein that binds Copper, thereby inhibiting Tyrosinase.
- Niacinamide inhibits transfer of melanosomes to keratinocytes.
- Lactobacillius/Citrus Medica Limonum Peel Ferment stimulates natural exfoliation to enhance skin clarity.
- Ferula Foetida Root Extract slows enzyme activity, inhibiting melanin formation.
- Phytic Acid chelates Copper, inhibiting step two of melanogenesis.

1. Press 6-10 drops onto skin.
2. Apply an even layer of Contour Masque over face, neck and eye area, or select from Dermalogica’s Professional Masque options.
3. Additional ChromaWhite TRx Complex can be pressed into skin prior to moisturizer application.

optional: For increased penetration and results, use beneath Collodial Masque Base with Galvanic Current on the negative polarity (2 minutes) and positive polarity (4 minutes).
treatments ChromaWhite TRx
As a professional skin therapist, you must outline a precise treatment regimen, both in the treatment room and at-home, for the greatest success when treating hyperpigmentation. While outlining a professional treatment regimen, be sure to express the following points to your client:

- In order to see results on the skin, clients must consistently use prescribed home care products every morning and every night for at least eight weeks before attempting to detect improvement. This is because it takes about forty-five days for existing melanin to slough off.

- Following a strict brightening regimen will fail to provide results if an SPF of at least 30 is not worn on skin whenever the client is outdoors. UV exposure during hyperpigmentation treatment will cause any discoloration or spots to reappear.

- Keep in mind the depth of the pigmentation will dictate the degree of effectiveness when treating hyperpigmentation. Dermal pigmentation is obviously more difficult to treat than epidermal pigment. Hormonally induced pigmentation and deeper post-inflammatory hyperpigmentation are often more difficult to treat than sun-induced pigmentation.

- You and your client should have realistic expectations as to the degree of lightening that you will achieve. It is highly unlikely that you will make a spot completely disappear — however, you can reduce its intensity and help to even out the overall pigmentation of the skin. Not all hyperpigmentation clients will respond favorably.
Because treating hyperpigmentation is progressive, be sure to follow the ChromaWhite TRx Rapid Results series of treatments timeline to help deliver a maximum benefit to skin.

**program | 1**
For severe hyperpigmentation, dark in color, present in multiple zones

- **Treatments 1-2** with MultiVitamin Power Exfoliant
- **Treatments 3-6** with MultiVitamin Power Exfoliant and Exfoliant Accelerator 35
- **Treatments 7-8** with Exfoliant Accelerator 35 alone (option of using Galvanic iontophoresis)

**Maintenance**
Perform 6 treatments over 6 weeks, progress to 2 treatments bi-weekly, then monthly maintenance

**Key Products to Prescribe**
ChromaWhite TRx System
Daily Microfoliant®
Daily Resurfacer

**Maintenance**
6 times over 6 weeks
once a month

**program | 2**
For moderate hyperpigmentation, medium in color, present in 4 zones

- **Treatments 1-2** with Daily Microfoliant and MultiVitamin Power Exfoliant for dry, sun damaged skin
  - Alternative Treatments 1-2 with Skin Exfoliant System for post-inflammatory pigmentation and breakout-prone skin
- **Treatments 3-4** with Skin Exfoliant System or MultiVitamin Power Exfoliant and Exfoliant Accelerator 35
- **Treatments 5-6** with Exfoliant Accelerator 35 alone

**Maintenance**
Prescribe 4 treatments over 8 weeks, progress to 2 treatments bi-weekly, then monthly maintenance

**Key Products to Prescribe**
ChromaWhite TRx System
Daily Microfoliant

**Maintenance**
4 times over 8 weeks
once a month

**program | 3**
For mild hyperpigmentation, present in 2 zones or less

- **Treatments 1-2** with Daily Microfoliant and Exfoliant Accelerator 35
- **Treatments 3-4** with MultiVitamin Power Exfoliant or Skin Exfoliant System
- **Treatments 5-6** with MultiVitamin Power Exfoliant and Exfoliant Accelerator 35 or Exfoliant Accelerator 35 alone

**Maintenance**
Prescribe 2 treatments bi-weekly, progress to 4 treatments over a 4 month period, then monthly maintenance

**Key Products to Prescribe**
ChromaWhite TRx System
Daily Microfoliant

**Maintenance**
2 times bi-weekly
4 times over 4 months
once a month
The ChromaWhite TRx Professional Treatment will be most effective when delivered as a series of treatments that are combined with a scrupulous home regimen. The treatment works to exfoliate dulling surface debris to improve surface clarity, regulate pigment production on a cellular level, and provide all-over brightening and tonal balance. Clients will enjoy a fresher, more luminous skin tone.

**suggested menu copy**
Accelerate brightening, improve skin tone, enhance skin clarity and create a fresher, healthier appearance with this effective treatment. Powerful exfoliants smooth skin and slough off dulling surface cells, helping to minimize the appearance of sun and age spots. Botanical extracts help treat and prevent cellular discoloration for unsurpassed brightening and tonal balance. Intense moisturization helps smooth fine dryness lines, improve barrier protection, nourish skin and shield against further environmental damage.

**contraindications**
Review the completed *Face Mapping®* Consultation Card. If the client is pregnant, do not use galvanic current. Take note of product contraindications if client is currently using prescribed exfoliation products.

All clients must complete the *Face Mapping* Consultation Card. The treatment procedure cannot be effectively carried out until this has been completed.
1. Remove all eye and lip make-up with Soothing Eye Make-Up Remover. Or, for more stubborn eye make-up, use PreCleanse on damp cotton.

2. Perform the Dermalogica Double Cleanse that begins with PreCleanse. Perform second cleanse with Tri-Active Cleanse. Steam may be used during second cleanse.

3. Perform Face Mapping® and establish causes and type of hyperpigmentation, and note areas of hyperpigmentation and degree of color on the Face Mapping Prescription Sheet. Also check the backs of the hands and upper chest area for signs of sun-induced pigmentation. A Woods Lamp can be used to determine dermal versus epidermal hyperpigmentation.

4. Select the appropriate exfoliation step according to your client’s skin condition and level of sensitivity:
   a. Apply Skin Exfoliant System for oily or acne-prone skin with signs of post-inflammatory hyperpigmentation. Customize with Exfoliant Accelerator 35 to intensify the level of exfoliation if desired.
   b. Apply MultiVitamin Power Exfoliant for dry, photodamaged and aging skin with signs of photo-induced hyperpigmentation. Customize with Exfoliant Accelerator 35 to intensify the level of exfoliation if desired. Remove MultiVitamin Power Exfoliant by thoroughly cleansing twice; first with PreCleanse, then with Special Cleansing Gel.
   c. For skin with considerable photodamage and hyperpigmentation, apply MultiVitamin Power Exfoliant and remove excess with a damp gauze, then cleanse with PreCleanse. Dispense Daily Microfoliant® in wet hands and create a creamy paste. Lightly massage over the skin for 1 minute to help remove all traces of MultiVitamin Power Exfoliant.
5. Follow with a warm steam towel customized with Purifying Botanical Mixer.

6. Press 6-10 drops of ChromaWhite TRx Complex onto the skin followed by a thin layer of Colloidal Masque Base. Use Galvanic Current on the negative polarity for 2 minutes and the positive polarity for 4 minutes. Alternatively, microcurrent can be used with a feathering technique. Concentrate on areas where there is visible hyperpigmentation.

7. If necessary press additional ChromaWhite TRx Complex onto the skin and follow with slightly damped gauze, tenting over the nose area. Mix Contour Masque as directed and apply with a spatula over entire face and neck, including the eye area, and leave on for 20 minutes. Alternatively, if time does not allow, select from Dermalogica’s Professional Masque options.

8. Remove masque with a warm steam towel customized with Purifying Botanical Mixer.

9. Dr. Lucas Pulverizator™ can now be used, customized with Purifying Botanical Mixer.

10. Spritz Multi-Active Toner or Antioxidant HydraMist and press 6 drops of ChromaWhite TRx Complex onto the skin.

11. Apply MultiVitamin Power Firm to eye area, followed by Pure Light SPF30. C-12 Concentrate and/or Extreme C can be applied all-over or as spot treatment under Pure Light SPF30.

To increase the success of the ChromaWhite TRx Treatment, a prescribed at-home regimen must be followed thoroughly to achieve visible results. It is also imperative that a minimum of SPF30 be worn during the daytime.
ChromaWhite TRx treatment
at-home application

daily | am

1. Perform Dermalogica Double Cleanse that begins with PreCleanse and follows with Tri-Active Cleanse. Follow with Daily Microfoliant® for 1-2 minutes.
2. Apply C-12 Concentrate and Extreme C to areas of discoloration.
3. Apply Pure Light SPF30 for moisturization and daylight defense.

daily | pm

1. Perform Dermalogica Double Cleanse that begins with PreCleanse and follows with Tri-Active Cleanse.
2. Apply C-12 Concentrate and Extreme C to areas of discoloration.
3. Apply Pure Night for overnight moisturization, treatment and brightening.

twice weekly

1. Use Powerfoliant² at night, before application of C-12 Concentrate and Extreme C, then follow with Pure Night.
2. If Powerfoliant² is used during the day, follow with Pure Light SPF30.
daily | am

[Product images]

daily | pm

[Product images]

twice weekly

[Product images]
introduction
The ChromaWhite TRx Hand Treatment addresses hyperpigmentation and the signs of premature aging on one of the most exposed areas of the body – the hands.

suggested menu copy
Address hyperpigmentation on an area of the body where they are most prominent – the hands! This effective treatment begins with intense cleansing and exfoliation, treats with botanical extracts to help prevent discoloration and accelerate brightening, and finishes with our SPF moisturizer that nourishes, helps smooth fine dryness lines and helps defend against further assaults that trigger pigmentation.

contraindications
Review the completed *Face Mapping*® Consultation Card. Take note of product contraindications if client is currently using prescribed exfoliation products. Take care to analyze the hands for any open cuts or abrasions before proceeding with the Chromawhite TRx Hand Treatment (you would want to avoid these areas).
1. Wipe hands and forearms with Post Extraction Solution followed by a thorough cleanse with Tri-Active Cleanse. Remove with a warm steam towel customized with Purifying Botanical Mixer.

2. Using a spatula, mix 1 scoop of Body Microfoliant® with 1 scoop of Thermal Heat Activator, 2 pumps of Clean Massage Oil Base and 2 scoops of warm water in a body pack bowl to a smooth paste. To customize, add 1 pump of Energizing Oil – Professional Strength. Keep warm in the steam cabbie until ready to use.

3. Apply 1/2 a bulb of MultiVitamin Power Exfoliant to each hand. Massage for 2 minutes, paying special attention to any pigmentation on the backs of the hands and forearms. Remove MultiVitamin Power Exfoliant with damp gauze, followed by an application of Body Microfoliant. Apply Body Microfoliant over the entire hand and forearm area. Remove with a warm steam towel customized with Purifying Botanical Mixer.

4. Apply 6 drops of ChromaWhite TRx Complex to the back of the hands.

5. Apply MultiVitamin Power Recovery® Masque in a thin layer over the hands. Wrap each hand in plastic film, then wrap with a towel to keep warm. Leave on for 5-7 minutes. Massage forearms while masque is processing: use 2 pumps of Clean Massage Oil Base customized with 1 pump of Energizing Oil – Professional Strength.

optional: Hands may be placed into heated mittens if available, or dipped in paraffin.

1. Remove any residue with a steam towel customized with Purifying Botanical Mixer.

2. Apply C-12 Concentrate to areas of hyperpigmentation, followed by an application of MultiVitamin BodyBlock SPF20 to the upper and lower arms.
How soon will clients see a result in their skin from the ChromaWhite TRx system? It is important for you and your client to set realistic goals about treating hyperpigmentation. Begin by educating clients on the fact that it takes 50 to 60 days for existing pigmentation to naturally desquamate from skin, meaning results are not instant. This is applicable to every brightening system on the market.

To expedite results, prescribe the Rapid Results series of professional treatments, based upon your client’s Face Mapping® and our suggested regimen (refer to the chart on page 30), in conjunction with a complete ChromaWhite TRx home care regimen.

When a consistent home regimen is followed and paired with ChromaWhite TRx professional treatments, clients should begin to notice results in 30 days. Each week, all-over skin evenness and brightening will progress.

How important is applying an SPF when treating skin with ChromaWhite TRx?
Wearing a Sun Protection Factor of 30 is a requisite when treating hyperpigmentation. Treating hyperpigmentation without the daily application of sun protection will counteract any brightening regimen.

Can ChromaWhite TRx be prescribed for treating other areas prone to hyperpigmentation, such as the décolleté and the hands?
Absolutely. ChromaWhite TRx can be used for the successful treatment of hyperpigmentation on these areas of the body. For the hands, prescribe the ChromaWhite TRx Hand Treatment. The same disciplined regimen of SPF application applies.

Why is Hydroquinone not one of the ingredients used in ChromaWhite TRx?
While Hydroquinone may be an effective pigment lightener, there are many concerns regarding its safety (see page 8 section of this Training Manual for full information). It is estimated that one third of the population is allergic to Hydroquinone, and skin may become photosensitized with prolonged use, causing actual darkening of the skin.

Because Dermalogica is first and foremost dedicated to delivering skin health, and because research yielded measureable results from safer methods of brightening skin, we determined it was best to not include Hydroquinone in ChromaWhite TRx.