Methods of Exfoliation

by Dr. Diana Howard

Exfoliation is a fascinating step in the skin treatment. It not only refreshes the skin nearly in an instant, it offers a multitude of methods for its use. From mechanical to chemical means and everything in between, skin therapists have an endless amount of options for not only the kind of exfoliation products to use, but the ways in which they may be used as well. Educate yourself on the following methods of exfoliation and learn about all the additional means and ingredients that are beneficial to this necessary step in the skin treatment.

Mechanical Exfoliation

Mechanical exfoliation employs the use of either a tool (i.e. a brush or sponge) or substrate (i.e. Corn Cob Meal, Rice Bran, Date Seed Powder, Oatmeal, etc.) that, depending on the amount of friction and nature of abrasive used, loosens and reduces the outer corneocytes. Take caution, because excessive abrasion can result in skin irritation, which is why The International Dermal Institute only recommends the use of abrasives that do not result in irritation. Therefore, we do not recommend the use of crushed fruit pits, shells or similar damaging substrates.

Chemical Exfoliation

Chemical exfoliation employs a variety of means to achieve skin renewal.

Hydroxy Acids: Chemical exfoliation utilizes chemicals such as hydroxy acids (i.e. Lactic Acid, Salicylic Acid and Glycolic Acid), Retinol (i.e. Vitamin A) and enzymes (i.e. Papain, Bromelain and protease enzymes from Bacillus microbes). It is thought that alpha hydroxy acids (AHAs) primarily affect the skin by normalizing cell turnover in the epidermis. This stimulates the formation of normal healthy skin, which includes a sloughing of the Stratum Corneum, a decreased formation of dry scales on the skin’s surface and stimulation of the cell cycle.

While this is indeed plausible, there are some researchers that believe the mechanism of action for AHAs cannot be tied solely to stimulation of the skin as measured by traditional cell renewal techniques. Studies on cell cohesion and skin pH changes indicate that keratin bonds may be affected, and that low pH levels associated with active AHA solutions may dissolve the desmosome protein linkages, causing a burst in skin exfoliation. It is often said that AHAs affect the skin from the inside out because of the suggestion that they influence corneocyte cohesion at the lower layers of the Stratum Corneum. The result is a thinner Stratum Corneum that is more flexible and compact, reflects more light and gives the skin a more youthful overall appearance.
While studies indicate that both Glycolic Acid and Lactic Acid affect the skin layers in the same manner, it should be noted that there are additional beneficial effects unique to Lactic Acid. These include an increase in dermal Glycosaminoglycans (GAGs — natural moisturizers), an increase in ceramides (epidermal barrier lipids) and improved water barrier properties.

**Salicylic Acid:** a beta hydroxy acid, differs from AHAs due to its lipophilic nature, which enables it to penetrate sebaceous substances in the hair follicle and exfoliate the pores. AHAs, being water soluble, are not as effective. In the studies comparing a two percent Salicylic Acid solution versus an eight percent Glycolic Acid solution, the Salicylic Acid significantly decreased the density of microcomedones whereas the Glycolic Acid Solution did not. Because Salicylic Acid has a much stronger comedolytic effect than AHAs on the skin, The International Dermal Institute highly recommends products containing Salicylic Acid when treating clients with acne. In addition, Salicylic Acid offers anti-inflammatory properties.

While the precise mechanism of action of hydroxy acids is still open to debate, there is a general consensus that exfoliation of the outermost layers of the Stratum Corneum (the Stratum Disjunctum) results in improved skin texture and a reduction in fine lines and hyperpigmentation. Recent studies demonstrated that a five percent Lactic Acid solution not only stimulated Stratum Corneum sloughing but also increased skin hydration and helped to reduce hyperpigmentation. Studies done by Walter Smith, PhD., compared the efficacy of a four percent Glycolic Acid solution versus a four percent Lactic Acid solution (both at a pH of 3). This study indicated that Lactic Acid was not only less irritating, but it was slightly more effective than Glycolic Acid in stimulating cell turnover. Interestingly, a four percent solution of Salicylic Acid was superior to both of the alpha hydroxy acids.

**Retinol:** In recent years, Retinol (Vitamin A) has been included in exfoliation formulas because the skin can convert Retinol to Retinoic Acid, a potent skin exfoliation and anti-aging agent. Retinol has been shown to improve the visible signs of photoaging as well as normal chronological aging when used on a daily basis.

**Enzymes:** Biological enzymes such as Papain and Bromelain stimulate exfoliation by digesting intercorneocyte cohesion chemically. These proteolytic enzymes decompose proteins into smaller fragments, causing a softening effect to the skin and a sloughing of corneocytes. Unlike AHAs, their activity is not pH dependent but is activated by water and limited in the amount of exfoliation that can be achieved.

Recently, studies on the protease enzyme (from the microorganism Bacillus subtilis) have demonstrated that it is a beneficial keratolytic agent that helps eliminate desquamating corneocytes when applied topically.

**Other Means of Exfoliation**
Other ingredients may be used to assist in exfoliation, including Rice Extract and Rice Bran. While the nutritional value of rice (Oryza Sativa) is well known, less obvious are the medicinal and cosmetic applications of this historical grain. Rice seeds and bran have been used for thousands of years to relieve inflammation associated with skin diseases and for cleansing and softening of the skin.

Traditionally, women in Japan have rubbed Rice Bran on their face to keep skin smooth and bright. Not limited to a beauty regimen of the upper class, female rice farmers used the water left over from cleaning white rice for bathing and washing their face to achieve smooth, luminous-looking skin.

To what do we attribute these benefits? Chemical analysis of Rice Bran (the outer layer on brown rice) indicates that it is a rich source of biologically active agents that are beneficial to the skin. These include Phytic Acid, Gamma Oryzanol and other important plant actives. Studies have shown that Rice Bran contains ten percent Phytic Acid (aka myo-inositol, a B complex vitamin) which chelates or binds calcium ions, helping to loosen cell cohesion and promote corneocyte sloughing. Phytic Acid also chelates copper, thereby inhibiting tyrosinase in melanogenesis and controlling hyperpigmentation. It also increases peripheral blood flow to the skin.

Gamma Oryzanol, a derivative of Vitamin B, is also known as a Ferulic Acid Ester. It provides enhanced antioxidant protection, softens skin and reduces itching when complexed with amino acids found in Rice Extract and Rice Starch. In addition, Gamma Oryzanol may impede melanogenesis by inhibiting tyrosinase. Moreover, Rice Bran contains Tocopherols (antioxidant Vitamin E) that protect against free radicals, Proanthocyanidins (anti-enzyme inhibitors of collagenase, elastase and hyaluronidase) and other enzymes (i.e. Super Oxide Dismutase, otherwise known as SOD).

**Educate, then Exfoliate**

Exfoliation is so wonderful because, with all its options, there is a product or ingredient for everyone – even those with the most sensitive of skin. As with all steps of the skin treatment, take care when administering any exfoliation modalities or ingredients/products. Of course, consult the consultation card and alert yourself to any contraindications. Once you familiarize yourself with all the methods of exfoliation and pair it with knowledge of your clients' skin, you will ensure the most beneficial exfoliation treatment possible.