

## ACIDS VS ENZYMES

What's the real difference between acids and enzymes when it comes to exfoliation? An easy way to explain how each works: *dissolve and digest*. Enzymes DIGEST – acids DISSOLVE.

### Exfoliating

Exfoliation is a necessary component of skincare. It's a fact that cell regeneration declines as we age. Shedding corneocytes (the outer layer of the skin) which used to turnover in about a month now may take up to two to three months to shed. This prolonged adhesion causes a buildup of cells and a compromised barrier, leading to transepidermal water loss (TEWL). If bacteria are present, breakouts can occur even with mature skin.

Chemical exfoliation with acids is effective, especially for minimizing the appearance of fine lines, but it's not suitable for everyone. For sensitive skin types, enzyme exfoliation may be a better choice. It's important to check your skin reaction each time you exfoliate. Enzymes are a gentler option for very dehydrated or sensitive skin conditions. The following should help you choose the appropriate exfoliation method for your client's changing conditions.

### Acids

Alpha hydroxy acids (AHAs) are the gold standard for cell regeneration. AHAs include glycolic (hydroxyacetic) acid, which is an organic carbon containing molecule.

When it comes to glycolic acid, it is important to always know your source, pH and percentage. Glycolic acid is generally derived from sugarcane, but it can also be sourced from fruits such as kiwi. It is hydrophilic and has a small molecular structure and weight. It penetrates deep within the upper layers of the epidermis, weakening the lipid bond (intercellular glue) and allowing the skin cells to be removed. This chemical process is believed to be caused by a reduction of calcium ions from cell adhesions.

AHAs are amazing acids for antiaging. They speed up cell turnover, dissolve lipid bonds, stimulate the skin to produce collagen and, if used on a regular basis, fade hyperpigmentation, plump and hydrate to reveal softer, smoother skin. (AHAs will not reduce or eliminate scarring.)

Estheticians may use a higher percentage (up to 30%) and lower pH than consumer products. Everyday products need to be a minimum of 10% to be effective.

Glycolic acid causes biochemical reactions in the skin due to chemicals such as calcium oxalate. Educate yourself on the use of AHA's, especially those with a lower pH and a higher percent. Strong glycolic acids can also have some inhalation toxicity when used in high levels over long periods.

There are many limitations to be aware of with AHA's - like sensitivity and Fitzpatrick type. Glycolic acid suppresses tyrosinase, which can cause a loss of pigment. Improper use in higher concentrations can, in rare cases, cause a lingering burning sensation, blistering and scarring. A mild lactic or malic acid is generally safe and beneficial – but only as safe as the practitioner's knowledge and experience.

### **Enzymes**

Enzymes are selective catalysts for many processes in the body, where 75,000 of them can be found. They speed up the rate of most of the chemical reactions within our cells. They are crucial for life itself and are responsible for many key functions in the body (like digestion and metabolism).

Facial enzymes generally come from the family of enzymes called proteases, or proteolytic enzymes (they break down protein). When formulated at a lower pH, they are more effective at loosening the corneocyte cohesion (shedding of dead cells). The proteins are broken down into smaller polypeptides or single amino acids. The peptide bond is broken by hydrolysis (water).

Enzymes are classified as chemical exfoliants; but they are actually biological with a physical action—they break down or eat protein. Because enzymes digest, not dissolve, they can remove dead cells without significantly changing the pH of the skin or damaging the barrier function.

Enzyme treatments are an effective, gentle way to keep cell regeneration moving. This helps the ability of product penetration, delivery of oxygen to kill bacteria, and improves skin health. They can be used with mechanical exfoliation and microdermabrasion.

Cleansers containing enzymes break up dirt and makeup without changing the pH, so hydration levels aren't compromised. Two of the most popular are bromelain, a proteolytic enzyme taken from the stem and juices of the pineapple, and papain, from papaya.

**Bromelain.** For centuries, bromelain has been used for home-care remedies and has been the topic of multiple studies on digestive disorders, dentistry, and wound healing. It is often used for its anti-inflammatory properties, treating soft tissue injuries. Hawaii, Japan, and Taiwan have used bromelain for centuries for homeopathic remedies. It is a gentle exfoliator that has anti-inflammatory and antimicrobial properties and contains an abundant amount of vitamin C.

**Papain.** Derived from papaya, papain is known for its antioxidant properties of A, B, C and lycopene. Its flavonoids fight free radicals and help to protect against premature skin aging. (A 2017 study showed the possibility of papain as a viable treatment for scarring.) It can lighten post-inflammatory hyperpigmentation. The enzymes, betakeratin, vitamins and phytochemicals in papaya are thought to have skin lightening properties. It has also shown promise for topically healing skin ulcers. Researchers continue to study the benefits of papain for its healing properties.

**Pumpkin.** Pumpkin enzymes are popular and a great opportunity for seasonal promotional treatments. Fall winds blow, the temperature drops, and the effects start to be noticed on the skin. Pumpkin enzymes contain vitamins A, B, C and E. Essential acids and vitamin E help to regulate sebum production, and vitamin B (niacin) combination is good for oily, congested skin. Pumpkin also contains minerals potassium and zinc to combat redness. Pumpkin enzymes are good for dry skin as they are softening and hydrating. While this enzyme has many therapeutic and anti-aging benefits, it is highly active, so use caution with first time clients.

**Berry enzymes.** Blueberry and raspberry enzymes are packed with antioxidants. Blueberry works great with acneic skin, as its active enzymes help soften sebaceous material trapped within the follicles. It works great for normal and combination skin too; however, it is a bit too stimulating for sensitive skin or rosacea. Raspberry enzyme is anti-inflammatory, anti-viral, antioxidant and a tyrosinase inhibitor, which is good for compromised skin and unwanted pigmentation. It contains high levels of polyphenol antioxidant ellagic acid. Raspberries are loaded with vitamins A, C, B6, riboflavin, niacin, folate, magnesium, potassium, copper, calcium, zinc, and manganese.

There is a major benefit to using enzymes and acids together since they exfoliate in different ways. One works on the buildup of dead protein cells, while the other works on intercellular cement. So synergistically, they can be more effective. As with any treatment, a thorough client consultation should be performed to rule out any potential allergic or sensitivity related reactions. The results will be very “appealing”.