


Enzymes and How They Work

By Sam Dhatt



In modern skin care, the word “exfoliation” has become a mantra, and the activity in itself is said to be a requirement for healthy, younger-looking skin. Two types of exfoliation are basic to our industry, mechanical and chemical. Mechanical exfoliation uses a physical method to remove dead cells and debris through scraping, brushing, rubbing, or ‘blasting’ them off the surface of the skin. Examples are granular scrubs, using pumice, nut particles, or polyethylene or jojoba beads. Particles are moved across the skin to remove the dead cells and debris. In general, mechanical exfoliation is used for cleansing the skin as it merely removes very superficial dead cells and debris from the surface of the skin. The exception to this is microdermabrasion; this mechanical exfoliation mechanism has been proven to remove dead cells and debris from the surface of the skin more than the other mechanical exfoliation services, plus to physically stimulate the rejuvenation of collagen and elastin in the dermal layer of the skin over time.

Chemical exfoliation can be deep cleansing in purpose, as with enzymes, or an actual treatment for increasing the turn over of cells, as in a resurfacing series. Generally, the deep cleansing method using enzymes is in the second cleansing step, the deep cleansing, for preparation of the skin for treatment, while resurfacing is the use of exfoliation percentage acids in the treatment step of a series. (Peels are not exfoliation- they literally dissolve superficial or moderate level layers of the epidermis, and potentially, the dermis, with layers lifting away from the surface of the skin within days of the peel treatment.)

Enzymes are very gentle proteolytic chemical exfoliants, meaning they digest the protein of the dead cells and debris on the surface of the skin. The activity is described by many skin care teachers as the “pac-man” effect, meaning the enzyme surrounds the protein and digests it, leaving nothing as a reminder of its existence. Enzymatic activity destroys the keratin of dead cells and the debris, allowing more alive and vibrant cells to be apparent to the observer on the surface. The skin is more even toned and smooth, the follicles are clearer and the skin is softened and hydrated. Enzymes are a must

use exfoliant in many aspects of skin treatment today.

THE USUAL ENZYMES

Several enzymes are used in the formulation of enzymatic treatments. The most used

enzyme ingredient, papain, is found in papaya fruit in tropical regions of the world, and in other fruits, including pineapple. Young papaya is the source of the most effective form of papain. It is also used in gentle skin cleansers and skin softeners.

Bromelain, another popular enzyme in skin care, is from the stem of the pineapple plant (*Ananas comosus*), a tropical fruit-bearing plant indigenous to South American countries. If this enzyme is in a formulation, the client should be asked about possible severe sulfur allergies before using it. Though a reaction is seldom a factor, the question is important prior to the use of a bromelain product to ensure the safety of the client.

Many products will utilize both papain and bromelain as each works on different protein and debris profiles. Their combination maximizes results. The rumor that one cancels out the other is true when they are formulated together in a liquid or lotion, but if they are formulated in a powder, then activated with an activator or warm water, they enhance the action of each other to their highest potential for the time they are needed on the face, then de-activate.

A biological enzyme minimally used in skin care is pancreatin. However, its formulation can be problematic as it must be at a particular temperature and pH to work optimally. Further, it is a very powerful enzyme and difficult to control in formulations. Also, this enzyme is very dangerous around the eyes as even a tiny amount can harm the eye terribly. Also, the source of this enzyme is pork or beef pancreas; the biologic resource for this ingredient causes a very strong odor which is difficult to control and can be nauseating to clients.

Concern for the minimal allergies to enzymes may soon be past. Bio-chemists are working to synthesize enzymes, “building” them in laboratories to attain reliability and full

safety. Success is near and the cosmetic industry will benefit from their work.

ENZYMES FORMULATIONS

There are three basic types of enzyme treatments. The oldest and most widely used in Europe is a cream containing paraffin and enzymes, called a *gommage*. It is applied and dries to a thin, crust-like mask on the skin in about 10 minutes. Then, the mask is rubbed off in areas stabilized with the fingers, as the removal area moves across the face. The paraffin rolls off the skin while the friction provide the removal of dead cells. Americans usually do not care for the irritation and feeling of this service and prefer other forms of enzyme treatments.

Another form of this product is an enzyme suspended in a lotion or cream. Most lotions use papain as the treatment enzyme in this formulation. The skin is cleansed, and then

the lotion is applied and steamed for 7-10 minutes. Then, the product is removed with sponges or gauze. This product is not as efficient in the enzymatic process as powder and activator formulations, but is gentle and very softening. The steam activates the suspended enzymes, initiating their proteolytic process.

The more popular type of enzyme treatment used in the skincare room is a powder enzyme that is mixed with an activator or warm water. The enzymes are activated during the mixing, bringing fresh, highly active, though gentle enzymes to the treatment. Mixed immediately prior to the application, the product is brushed onto the skin and steamed for 7-10 minutes. The enzymes go to work in the warm, wet environment and the steam maintains their activity to its maximum. After steaming, the mask is easily removed, leaving bright, clean and soft skin for treatment or for post enzyme mask products.

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Many product lines that utilize an activator are expanding the role of the activator.

The powder will be the enzyme, waiting to be activated, while the activator will have further active ingredients, such as a sebum saponifier, to prepare the skin for extractions. Many other beneficial ingredients are being added, according to the desired targeted results. New firming enzyme products available are an example; the activator is formulated to enhance the normal benefits of the enzymes into anti-aging by including peptides, such as matrixyl and argirelene, to stimulate collagen and elastin development, an anti-oxidant cocktail for anti-aging, and humectants, to provide a visible plumping of the skin, post treatment.

The mixed-at-the-chair enzyme mask has proven to produce a more even and thorough removal of dead cells and debris; to cleanse and dilate the follicle openings for more easily performed extractions; and to make a more obvious change in the skin, post treatment. Though some skin care professionals prefer the no-mess applications that do not require mixing, these formulations produce better results, hands down. They can be used on all skin types and conditions in a gentle exfoliation of the skin.

ENZYMES ARE VERY GENTLE PROTEOLYTIC CHEMICAL EXFOLIANTS, MEANING THEY DIGEST THE PROTEIN OF THE DEAD CELLS AND DEBRIS ON THE SURFACE OF THE SKIN

NEW REASONS FOR USING ENZYMES

Enzymes have been considered a great deep cleanser for a long time, but there is more to them than just a great surface cleanser. Estheticians now use them for preparing the skin for targeted treatments such as acne and anti-aging, believing there is a visible difference in results due to their role in "opening" the skin. They utilize enzymes for preparing the skin for deeper penetration of the following treatment mask in a facial, or prior to a resurfacing acid. They can visibly observe the positive difference when they use them, versus when they do not. The maximum removal of the blocking dead cells and debris allows a much better and speedier result for the targeted treatment.

An enzyme mask also can be the preparation facial for jump-starting home care. For example, dry and dehydrated skin will benefit from the removal of the dead cells by the enzyme mask, allowing the hydrating home care to bring faster, more noticeable results to the skin. Also, acne home care is much more likely to unclog and reduce inflammation if the accumulated buildup of cells has been removed from the skin surface. And anti-aging products can penetrate deeper and faster to stimulate collagen and elastin development if these blockages are removed.

Pre-conditioning of the skin is recommended prior to a resurfacing series or before a peel for enhancing results and preventing adverse responses. For that reason, many estheticians are performing a "prep facial" at the appointment when the client is signing up for a series or peel. The procedure utilizes an enzyme product in the treatment section of the facial, after a gentle scrub in the deep cleansing step, and

is followed by the post treatment products. This facial is the jump-start for the home care products

that will prepare the skin for the series or peel, prepares the client mentally and the skin physically for the following series or peel.

New enzyme formulas are stepping up their purposes to treatment level, also. For example, new pumpkin enzyme formulations, with their natural alpha and beta hydroxy

acids, are being utilized in anti-aging and acne care instead of the more potent acids, as a welcome change from them or as the maintenance treatment.

The new firming and toning peptide and enzyme masks on the market are being utilized by estheticians for what can be called an "event facial." This treatment enables estheticians to especially improve a client's skin who is going to a special event, to a job interview, or just needs a pick me up. The noticeable firming, toning and brightening of the skin is a money-making targeted facial estheticians can perform for temporary but quick and noticeable changes in the skin of the client needing to look her very best for a special occasion. Used in a series, with supportive home care, this facial supports noticeable development of collagen and elastin, taking enzyme therapy into the realm of anti-aging care. Clients who do not care for or cannot have an acid series have an alternative that produces results, without the stinging of acid applications.

Bio-chemists have taken enzymes from cleansing into treatment care, from a supportive role into an active role in skin care treatments with the development of this mask and savvy estheticians will take notice of the role of enzymes in their work regimen.

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