

Dermatology Associates of Plymouth Meeting
Newsletter Vol. 4, #1
January 2009

Moisturizers

"Dry skin", or xerosis, is an extremely common problem, and our society, and its advertising suggest that we have a simple solution - just apply a moisturizer. The marketplace has a great number of products to moisturize the skin and dermatologists divide them into different classes, based on how they work.

These classes include:

- Occlusives
- Humectants
- Emollients
- Protein rejuvenators

What Are Moisturizers?

Moisturizers are bland, oily substances that are applied to the skin by rubbing. They are used to replace natural skin oils to cover tiny fissures in the skin, and to provide a soothing protective film. By doing this, they slow evaporation of the skin's moisture, thereby improving the appearance and feel of dry and aging skin.

How Do Moisturizers Work?

The stratum corneum is the outermost layer of the skin and is largely responsible for the vital barrier function of the skin. Before the mid-1970's the stratum corneum was thought to be biologically inert, like a thin plastic sheet protecting the more active lower layers of the skin.

In the past 30 years, and especially the past 5 years, scientists have discovered that the biological and chemical activity of the stratum corneum is very intricate and complex. Dry skin is noted when the moisture content is less than 10%, and there is loss of continuity of the stratum corneum.

Traditionally, moisturization was believed to inhibit water loss. Water originates in the deeper skin layers and moves upward to the cells in the stratum corneum, eventually being lost to evaporation.

Scientifically, the moisturizing treatment involves a 4-step process:

1. Repairing the skin barrier
2. Increasing water content
3. Reducing water loss
4. Restoring the skin's ability to attract, hold and redistribute water

Cleansing and moisturizing are the key components to maintaining healthy, youthful skin. Cleansing removes dirt, grime, and dead skin cells, but cleansers also have a harmful effect on

the skin by drying it out. Moisturizers not only increase the skin's water content, but they also protect the skin and encourage an orderly desquamation (shedding) process that makes the skin appear more smooth. Increases in water loss are typical noted in direct proportion to the cleansing ability of a cleanser.

What Is The Ideal Moisturizer?

The ideal moisturizer should be:

- An effective moisturizer – providing moisture to the stratum corneum and reducing and preventing water loss
- An emollient – making skin smooth and supple and reducing water loss
- An aid in restoring the lipid barrier, that is duplicating and enhancing the skin's natural moisture retention mechanisms
- Cosmetically elegant and acceptable
- Moisturizing to sensitive skin – that is, hypoallergenic, non-sensitizing, fragrance free, non-comedogenic (does not cause pimples)
- Offered at an affordable price
- Long lasting
- Absorbed rapidly providing immediate hydration

The number of moisturizers on the market is astounding and most claim to have properties that no other moisturizer has. In this newsletter, we will cover the key ingredients in moisturizers and their effects on the skin in - humectants, occlusive's, and emollients.

Imagine being able to read and understand a moisturizer ingredient label. Grab your moisturizer bottles, jars, and tubes and we'll get started.

Class	How does it Work?	Example ingredient	What is it used for?	Possible side effects
I. Occlusive	It Physically blocks water loss	<ul style="list-style-type: none"> • Petrolatun • Lanolin • Mineral Oil • Zinc Oxide 	<ul style="list-style-type: none"> • Xerosis • Atopic dermatitis • Prevention of irritant contact dermatitis 	<ul style="list-style-type: none"> • Messy • Some can cause folliculitis (mineral oil) • May cause pimples • Some may cause contact dermatitis

				(lanolin)
II. Humectants	Attracts water to the stratum corneum	<ul style="list-style-type: none"> • Glycerin • Sorbitol • Urea • Alphahydroxy acids • Sugars 	<ul style="list-style-type: none"> • Xerosis • Ichthyosis • Skin rejuvenation 	<ul style="list-style-type: none"> • Some may cause irritation (urea, lactic acid)
III. Emollients	Smooths skin by filling the spaces between skin flakes, with droplets of oil	<ul style="list-style-type: none"> • Cholesterol • Squalene • Fatty Acids 	<ul style="list-style-type: none"> • Reduces skin roughness 	<ul style="list-style-type: none"> • They're not always effective
IV. Rejuvenators	They claim rejuvenate the skin by replenishing essential proteins	<ul style="list-style-type: none"> • Collagen • Keratin • Elastin 	<ul style="list-style-type: none"> • Skin rejuvenation 	<ul style="list-style-type: none"> • Unlikely to work because the protein molecules are too large to cross the epidermis • Some may cause contact dermatitis

[Groupings Of Moisturizing Substances Based On How They Work \(see above\):](#)

Occlusives:

Occlusives are substances that physically block water loss in the stratum corneum. Petrolatum in a minimum concentration of 5% is the most effective occlusive followed by lanolin, mineral oil, and silicones such as dimethicone. Petrolatum is widely used as a classic moisturizer. Lanolin is also widely used and quite effective.

Humectants:

Humectants attract water when applied to the skin and theoretically improve hydration of the stratum corneum. However, the water that is drawn to the skin is water from other cells, not

atmospheric water. With this type of moisturizer, evaporation from the skin can continue and actually make the dryness worse. Manufacturers' attempts to include humectants into moisturizers do not always produce a beneficial effect. High concentrations of propylene glycol and urea can be irritating. Pure mixtures of amino acids are useless as moisturizers. Pure solutions of glycerin are ineffective and propylene glycol by itself is irritating.

Alphahydroxyacids, such as lactic acid or glycolic acid, appear to increase cohesion of the stratum corneum cells, thereby reducing roughness and scaling.

Emollients:

Emollients smooth skin by filling spaces between skin flakes with droplets of oil, and are not usually occlusive unless applied heavily. When combined with an emulsifier, they may help hold oil and water in the stratum corneum. Vitamin E is a common additive, which appears to have no effect, except as an emollient. Likewise, other vitamins, for example, A and D, are also added, but their effect is questionable. Examples of emollients include mineral oil, lanolin, fatty acids, cholesterol, squalene, and structural lipids.

Molecules called structural lipids are located between stratum cornea cells, and are also felt to play a considerable role in the water holding potential of the stratum corneum. Ceramide is a major component, natural ceramides themselves are at present too expensive to make commercially available. However, several pseudo-ceramides have been synthesized and clinically shown to be effective in preventing and improving dry skin.

Moisturizers containing collagen and other proteins, that is, keratin and elastin, claim to rejuvenate the skin by replenishing its essential proteins. This is unlikely to occur since these protein molecules are too large to penetrate the skin cells. Protein additives may provide temporary relief from dry skin by filling irregularities in the stratum corneum. Like emollients, when they dry they shrink slightly, leaving a protein film that appears to smooth the skin and stretch out some of the fine wrinkles.

When Are They Used?

- Dry skin, for example, xerosis, or as a result of metabolic conditions, such as renal insufficiency and/or diabetes
- Atopic dermatitis
- Ichthyosis vulgaris
- Irritant contact dermatitis and prevention
- Nummular dermatitis
- Psoriasis
- Skin protection, for example, from skin damage due to sun exposure, or to frequent hand washing

Utilizing the right moisturizer for your skin is important. There are different types of products for different skin types.

Below is a list of sample products that have been tested and found to be of high quality by Consumer Research. These products are designed specifically for the face which can be a problematic area. For the body, depending on the problem, you must select a product based upon its makeup, consistency and smell. Our group tends to recommend products such as

Nivea and Eucerin. We also like Cutemol for dry itch hands and feet. AM Lactin, an over the counter product with Urea, is another excellent compound for dry, scaly hands and feet.

PRODUCT SUGGESTIONS

- [Olay Regenerist UV Defense Regenerating Lotion SPF 15](#)

*Est. \$18 for 2.5 oz.

- [Estee Lauder DayWear Plus Multi Protection Anti-Oxidant Lotion SPF 15](#)

*Est. \$40 for 1.7 oz.

- [Aveeno Ultra-Calming Daily Moisturizer with SPF 15](#)

*Est. \$15 for 4 oz.

What the Research Says

Best facial moisturizer overall

Experts point to Olay Regenerist UV Defense Regenerating Lotion SPF 15 (formerly Olay Regenerist Enhancing Lotion with UV Protection) as the best moisturizer for skin of all ages. It provides both UVA and UVB sunscreen protection. It is also loaded with antioxidants and amino-peptides to further prevent damage. Reviews say that Olay's Regenerating Lotion has excellent moisturizing capabilities for normal to slightly dry or slightly oily skin. Because it contains fragrance, however, it may not be suitable for those with allergies or sensitive skin.

High-end moisturizer for oily skin

Although there are many high quality moisturizers available at the drugstore for a fraction of the price, Estee Lauder DayWear Plus Multi Protection Anti-Oxidant Lotion SPF 15 has some extra ingredients that may make it a better value than most. Notably, it combines vitamins C and E with eight antioxidants and UVA/UVB sunscreen to provide protection from the sun and free radicals. This product is recommended for oily skin types that struggle to find a lightweight, non-greasy moisturizer that also contains sunscreen. Estee Lauder's Anti-Oxidant Lotion is also available with SPF 30 for normal/combination skin.

Best facial moisturizer for sensitive skin

If you have sensitive skin, reviews recommend Aveeno Ultra-Calming Daily Moisturizer with SPF 15. It lacks the antioxidants found in the Olay Regenerist moisturizer line, but reviews say that Aveeno's included feverfew, oatmeal and soy ingredients that are very soothing to dry irritated

PRODUCT SUGGESTIONS

What the Research Says

skin. It also utilizes avobenzone to provide both UVA and UVB sunscreen protection. The oil-free formula does contain some fragrance, however.

- [Clinique Acne Solutions Clearing Moisturizer](#)

*Est. \$16 for 1.7 oz.

Moisturizer for oily skin

For oily skin that's prone to acne, Clinique Acne Solutions Clearing Moisturizer contains an oil-free hydrating formula along with benzoyl peroxide to fight acne. Reviewers say that it dries up breakouts without drying the rest of your face. This moisturizer does not contain any sunscreen, however.

- [Neutrogena Healthy Skin Anti-Wrinkle Cream](#)

*Est. \$13 for 1.4 oz.

Best anti-wrinkle moisturizer

Skin-care reviews and consumers give high marks to Neutrogena Healthy Skin Anti-Wrinkle Cream, which contains retinol, a vitamin A derivative, to help reduce fine lines (keep in mind that no moisturizer can actually eliminate wrinkles -- they can only make them look a bit better). The Neutrogena formula is oil-free and fragrance-free. It is suggested that one buys the version that has SPF 15 sunscreen for daytime use, though it only contains UVB protection. One review notes that Neutrogena's anti-wrinkle formula is comparable to Estee Lauder's Diminish Anti-Wrinkle Retinol Treatment (*est. \$80/1.7 oz)

Adapted from an article published in the Skin Therapy Letter: Lynde CW. Moisturizers: what they are and how they work. Skin Therapy Lett. 2001 Dec; 6(13):3-5.