

Oily Skin, Acne and Ifrenel s.a.

People often wonder if there is a connection with having oily skin and having acne. Why do teenagers with oily skin seem to have the worst acne? As we grow older, we long to have skin that has more oil, looking moisturized and less drying, but in the teen years, excessive oil on the skin may irritate the skin, so there is a connection between oily skin and acne¹.

Acne is one of the most common skin problems as it appears in 85% of adolescents^{1, 2}. Mild forms don't usually cause problems, but many teens experience moderate to severe forms of acne, which lead to psychological distress. By adult life, most individuals will have developed some form of the disease therefore acne has been termed a physiologic disorder¹.

Acne is more common in males and it may be due to the influence of male hormones at puberty, as the gonads start to secrete androgens, such as testosterone and the more active target tissue androgen, dihydrotestosterone (DHT)³. Androgens have been correlated with the acne and oily skin that occurs in both males and females during the adolescent years.

Initially, acne appears to have four primary components: a) abnormal keratinization; b) androgens, which stimulate the sebaceous glands to produce more lipids such as, c) sebum, oils, waxes and fatty acids, then, d) bacteria, such as *Propionibacterium acnes*, which intensify the situation by using sebum as a substrate to produce more irritants in the sebaceous gland, aggravating the skin to produce inflammatory lesions².

The fundamental organelle in skin affected by acne is the sebaceous gland, which is also a part of the pilo-sebaceous unit, which includes the hair follicle. As teens approach puberty, their gonads start to secrete more sex hormones, such as testosterone and DHT in males. In females, it is a combination of weaker androgens, such as androstenedione,

dehydroepiandrosterone (DHEA), progestins and others steroids secreted by the ovaries that affect sebaceous glands. These hormones cause the sebaceous glands to enlarge and produce more sebum, oils and fatty acids that are excreted onto the skin. These glandular secretions give that greasy, oily look that so many teens commonly have during their adolescent years².

Sebum production and acne

The composition of sebum in acne has been reported to be no different from normal except for a decreased quantity of linoleic acid, which is an essential fatty acid, typically obtained through dietary sources¹. However, the production of sebum is significantly increased in most patients with acne and this seems to correlate in greater quantities to patient severity. Some patients may note a dietary relationship of certain foods exacerbating acne, but this may be only specific to some individuals and therefore, there are no rules for omitting specific foods for patients with acne¹.

Since sebaceous glands respond to androgens, which are being produced by the gonads, it has been suggested that increased sebaceous gland activity may be due to hormonal problems or irregularities. For girls experiencing their menses, this may take a few years for menstrual cycles to regulate and normalize. For males, androgens continue to increase, with testosterone and DHT rising to levels seen in normal adult men. Their bodies may also need a few years to adjust to the changes taking place which include, beard and terminal hair growth on the face and body, increased muscle and bone mass, sperm production, changes in voice and scalp hair patterns³.

For many teens, this is a period of anxiety and stress as their body changes; so do their psychological and social stressors. Stress can produce more adrenal androgens, which can aggravate the situation even more so, as adrenal androgens can add to the gonadal pool and have systemic effects on skin, aggravating acne. As more lipids, fatty acids, oils and sebum are produced,

the *P. acnes* bacteria produce other irritants to increase inflammatory lesions. Abnormal keratinization is also a factor as the sebaceous gland duct is affected by all of these changes, producing clogged pores, more comedones and irritated epidermal and dermal tissue layers.

For some teens, allowing the body to adjust to the many growth and hormonal changes is all that is needed to allow the acne to subside on its own. However, for the majority, acne is so bothersome that teens will often seek various over-the-counter (OTC) remedies as well as medical therapies to treat acne. For some, the lesions become so severe that they affect the face, back, arms and all upper body areas. In male teenagers, pseudofolliculitis may even occur where there are pustules and inflammatory lesions affecting the entire pilo-sebaceous units, because the hair follicle become irritated from shaving, resulting in small pustules around the hair follicle.

Treatment options

Mild local reactions to acne include itching, painful, tender lesions due to the inflammation and bacterial infection forming pustules and cysts, along with stinging, excessive oiliness, erythema, peeling and even areas of dryness as the skin cycles through the stages of the various lesion types. Most OTC remedies include acne scrubs, washes, astringents, and very commonly, the use of benzoyl peroxide, which works as a bactericidal agent.

Benzoyl peroxide can be a very effective treatment as it affects the bacterial flora and most patients notice an immediate dryness to the skin. With continued use, benzoyl peroxide may also cause burning, redness (erythema) and peeling as the skin becomes very tender to the oxidizing affects of the topical agent. Benzoyl peroxide can come in lotions, creams, gels ranging in concentrations from 2.5 to 20%. It should be noted that the stability of benzoyl peroxide depends on the vehicle it is placed in. Gels are more water-based and more active to drying and less irritating than alcohol or acetone based preparations. Systemically, benzoyl peroxide is absorbed and rapidly cleared by the kidneys so that no systemic toxicity due to drug accumulation is usually experienced³.

Benzoyl peroxide is one of the most widely used agents to topically treat acne. For many patients this is

not effective or patients may have some benefit to benzoyl peroxide but later find that they are not responding as well to the treatment. There are a host of other topical and oral medications to treat acne, such as topical and oral antibiotics and agents that affect the keratinization, or follicular epithelial proliferation, such as retinoids like Retin-A (Roche Co), and Accutane (Ortho/J&J)³. Retinoids are the most commonly used treatment for non-inflammatory acne and may take longer (weeks to months) to see positive effects. Physicians commonly prescribe combination therapies such as using benzoyl peroxide (seeing immediate positive results) while using other therapies that take much longer such as, retinoids or antibiotic therapy.

Ifrenel s.a. as a novel approach

A more revolutionary approach to treating acne may be a new therapy called **Ifrenel s.a.**, a unique natural mineral complex recently discovered from marine science research. Ifrenel s.a. has some very interesting properties that should be considered as a first line defense against acne. Since sebum irritates the skin and produces acne lesions, it has been suggested that newer therapies could include agents that soak up or eliminate these surface irritants, without systemic absorption or any adverse side effects. Ifrenel s.a is such an agent. Being a natural mineral complex, it may be a useful and more beneficial route to treating acne and those suffering the discomforts of oily skin. Ifrenel s.a. has the ability to absorb excess oils and surface impurities from cosmetics and pollutants from the skin. The cleansing treatment has the added advantage of leaving the skin soft and smooth.

Application of Ifrenel s.a is similar to a gentle microdermabrasion, which dislodges dead epidermal cells with immediate results as a smooth, silky, hydrated skin surface. Incorporated within this mineral complex is microencapsulated salicylic acid that enhances the removal of dead surface cells and prevent the clogging of pores so that inflammatory lesions are prevented from forming. It makes perfect sense to consider natural sources before any choice of topical chemicals, drugs or systemic therapy to treat mild to moderate acne. Ifrenel s.a. can now be considered as a first line of defense for teens to use when combating the signs and various stages of acne. Ifrenel s.a may also be useful to continually use for those who desire softer, smoother skin as it maintains skin integrity and lessens topical irritants that we encounter on a daily basis, whether produced by the skin or environment so that healthier skin can be maintained in a natural way.

References

1. Demis, D.J. Clinical Dermatology, "Acne vulgaris" Vol 2, 10:2; p 2-20, Lippincott Company Publishers, Philadelphia, PA, 1992.
2. Camacho F, Montagna W. Trichology: Diseases of the pilosebaceous follicle. Aula Medica Group, SA, Chapter 16. Dermatoses related to the sebaceous glands. p 723-730, 1997.
3. Wolverton S E, Comprehensive Dermatologic Drug Therapy, 2nd Edition, Chapters: 23, 28, and 33. Saunders, Elsevier Publishers, 2007.



**Marty Sawaya
MD, PhD**

Dr. Marty Sawaya received her PhD from the University of Miami's Department of Biochemistry in 1983 and her MD from the University of Miami School of Medicine in 1986.

She continued her research affiliation with the University of Miami's Department of Biochemistry and Molecular Biology as an adjunct faculty until 2007. Previously, Dr. Sawaya was an assistant professor of medicine at SUNY Brooklyn Health Science Center, assistant professor of medicine at the University of Florida College of Medicine (Gainesville, FL) and senior medical director at Shire Pharmaceuticals.

She has written over 80 published peer-reviewed scientific articles, books and abstracts on hair and sebaceous glands.