

What is Acne?

Acne is a condition that most people have experienced at some point in their lives. Whether seen as a teenager, adult or both, those who've been unfortunate enough to cross its path know what an incredibly frustrating condition it can be. But what exactly causes acne? Dermatologists and skin therapists alike have studied all possibilities, from diet to skin type to stress, and everything in between. While many issues may exacerbate acne, we now know that there are four main factors that actually contribute to acne.

The four main factors behind acne are:

- Sebaceous glands and sebum
- Cell proliferation
- Bacteria
- Type of follicle

Let's explore these further to better understand the process of acne.

Sebaceous Glands and Sebum

Despite which form of acne is prevalent on a client, we know that sebum production or, oil, is the catalyst for the series of events that result in acne or skin breakouts. Clients often don't realize they have even a mild form of acne and attribute their skin condition to excess oiliness. As skin care professionals, we know that this excess sebum is often associated with enlarged pores, a tendency toward follicle congestion and an oily T-zone. In addition, the problem may not be too much oil, but the type of oil. Thicker and stickier oil does not leak on to the surface quite as easily as thinner oil.

To really understand how we can affect this skin condition, we need to grasp what is actually occurring in the skin to trigger this excess sebum. In men, testosterone is secreted by the male sexual organs, and in women it originates from the ovaries and adrenal glands. In both sexes, testosterone is secreted into the body and enters into the sebaceous gland, where the enzyme 5-alpha reductase converts the testosterone into di-hydrotestosterone; this in turn stimulates sebum formation in the sebaceous glands.

Because 5-alpha reductase is sensitive to hormone levels, it goes into overdrive, causing an excess production of sebum when testosterone levels escalate. This is very noticeable during puberty. However, recent studies have shown that hormone levels alone are not solely responsible for sebum production. We know that 5-alpha reductase may increase its sensitivity to testosterone, triggering excess sebum production even when lower levels of the hormone are present. Unfortunately, the cause of this phenomenon is unknown. However, it does explain why excess sebum can occur when testosterone levels are not elevated.

Insert chart on page 3 of medi-Bac training manual

Cell Proliferation

In a normal follicle (Image A), dead surface cells are continually sloughed from the epidermal canal and are deposited at the surface of the skin. However, when acne is present, a proliferation of cells occurs at the neck and extends to the follicle. It's accompanied by excess sebum, which causes the cells and bacteria to stick together. The conglomeration of the sebum and cells leads to the formation of an impaction plug that provides a nice anaerobic environment for the bacteria to thrive in. This process, whereby abnormal desquamation of sebaceous-follicle epithelium results in altered keratinization, is often called retention hyperkeratosis. This (first stage) impacted follicle is often referred to as a micro comedone.

Researchers have found that there are fewer lamellar granules in the Stratum Granulosum of acneic skin. As the lamellar granules contain the desquamation of enzymes and lipids that comprise the barrier layer in the intercellular spaces, this could account for the accumulation of cells in the follicle canal. Likewise, acneic skin is more permeable around the sebaceous gland and follicle, which may lead to leakage and inflammation into surrounding tissues. Studies have shown that linoleic acid, an essential fatty acid that is a component of the barrier lipid layer, is indeed deficient in acneic clients.

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Bacteria

Bacteria in the follicle excrete a lipase enzyme to break down the sebum triglycerides into fatty acids and glycerol. The sebum is used as a food source and the free fatty acids are merely waste products that irritate the lining of the follicle. At this point, the disease may result in non-inflammatory lesions and simply produce closed comedones (whiteheads – Image B), which may turn into open comedones (blackheads – Image C) and expel their contents.

Type of Follicle

Inflamed lesions may also result in adult acne, whereby the follicle wall ruptures, forming a papule (Image D). If the break in the follicle is close to the surface, a pustule results (Image E). If it is deeper, a nodule forms. In some cases, a membrane entraps the infection and a cyst develops. Regardless, Matrix Metalloproteinase (MMPs) enzymes are stimulated to help repair the damaged tissue while white blood cells invade the area, causing inflammation to set in.

Understanding Acne

Scientists are making progress in their understanding of acne; however, skin therapists everywhere know it's not always easy to treat. Stress, diet, improper home care and make-up are just a few of many possible triggers outside of the four main causes of acne, but no one cause or trigger can truly be to blame. Still, remind your acneic clients to pay attention to any triggers that may further inflame their skin, and if the situation persists, advise them to visit a dermatologist.

In the meantime, we as skin therapists need to remember that acne may not always appear to be problematic. Even mildly acneic skin automatically becomes susceptible to sensitivity, although it may not appear as so. Understand that it is vital to treat our clients' acne conditions with care and avoid any harsh ingredients or treatments that may further exacerbate the condition.