

The Cause and Treatment of Acne Conditions

Science:

There are three main issues that lead to the various grades of Acne.

1. Blocked Pores
2. Oily Skin
3. Bacterial overproduction

1.) The skin surface is made up of many layers of dead skin cells (stratum corneum – keratinocytes) and these cells also line each pore (follicle epithelium). Normally these cells are exfoliated off the skin surface and out of the pores and the normal flow of oil can therefore escape the pore. With acne sufferers, dead skin cells become sticky and are retained within the pores and a "plug" develops, resulting in oil blockage. There is no known cure for this condition, but it can be controlled with topically applied exfoliants like AHA's, BHA's, digestive Enzymes, and Retinol. These key ingredients in skin care preparations can loosen the ionic bond (stickiness or "glue") that holds dead skin cells together, increase the turnover rate, and allow for these cells to be lifted off the skin and out of the pore more normally. The results are normally functioning pores that are free of impacted keratinocytes and able to release the flow of oil.

2.) Oil is produced by oil glands known as sebaceous glands deep within the skin (dermis). Pores will enlarge in order to accommodate for the flow of oil produced. Areas on the body where oil glands are most heavily concentrated are the face, neck, chest and back—areas where body acne can be common. Genetics determine the amount of oil that an individual produces. Hormones (androgens) also affect the amount of oil produced. People may have the same level of hormones, but produce different amounts of oil because their oil glands respond differently. Genetics, adolescence, pre-menstrual times, stress, and certain foods can all lead to hormonal surges and increased oil production. With an increase in oil production, the pore follicles can become overwhelmed. If the pores do not function properly (retention hyperkeratosis) the increased oil production can be an even greater problem. Inflammation can develop in the pore follicle and in the sebaceous gland as bacteria begin to overpopulate and release destructive enzymes. The only way to adjust the amount of oil the body will produce is with the oral prescription of Accutane. This will shrink the oil gland and limit the oil production for a limited period of time. Some times the body will, on its own, slow down the production of oil. Stress and certain foods have been theorized to play a role in oil surges and addressing these areas could be helpful. Some physicians even prescribe certain medications that limit the androgen production, and thus reduce oil production.

3.) With this environment set up, bacteria (*Propionibacterium acne*), which is normally found on the skin surface and in all pores, begins to overpopulate and release destructive inflammatory enzymes that can break down the pore and gland cell walls. Thus begin the problems associated with acne. Open comedones (blackheads), closed comedones (whiteheads), pustules and papules can develop. Simple retained material (specifically melanin) in the open pores lead to blackheads. Closed comedones (whiteheads) develop when the pores become completely blocked and the bacteria begin to overpopulate the upper reaches of the follicle. Pustules and papules develop when the bacteria overgrowth is so advanced that the pore and gland cell walls have been broken and bacteria has now entered "live" tissue. With this, the body will dispatch white blood cells to attack the "infection" and the nodular, painful, red, cystic acne conditions become evident. To reduce the bacterial actions, topical antibiotics are used to address the superficial acne concerns – grade 1 & 2 (whiteheads with mild inflammation). Oral antibiotics, along with topical, are used when the acne becomes more severe – grades 3 & 4 (cystic acne with more severe inflammation, redness, and soreness). Topical use of Salicylic acid and Triclosan are noted for their antibacterial actions.

Made Simple

In short, since there is no known cure, understanding the cause's of acne conditions and how the skin responds to acne treatment options, will allow for a better approach in reducing the frequency and severity of acne over time. A "recipe" can be developed accordingly to address the particular grade of acne presented with each patient.

Biophora products that help ease Acne conditions

- **Bioactive Cleanser** – Exfoliating, pH balanced cleanser designed to remove oil, dirt, debris, and available dead skin cells on the surface of the skin and out of the pore.
- **Bioactive Solution & Bioactive Solution Extra Strength** – 3 & 5% Glycolic acid, 0.75% Salicylic acid for advanced exfoliation of the skin surface and pore follicle and for antimicrobial actions.
- **Bioactive Gel & AHA Active Gel** – 8 & 15% Glycolic acid, 0.75% Salicylic acid for even more advanced exfoliation of the skin surface and pore follicle and antimicrobial actions.
- **Enzyme Exfoliating Mask** – Papain and Bromelain digestive enzymes, soft exfoliating granules (Diatomaceous Earth) used occasionally for deep, advanced, enzymatic exfoliation of the skin surface and pore follicle.
- **Antibacterial Veil** – Triclosan for surface and pore follicle antimicrobial actions.