Periodic Graphics

A collaboration between C&EN and Andy Brunning, author of the popular graphics blog *Compound Interest*

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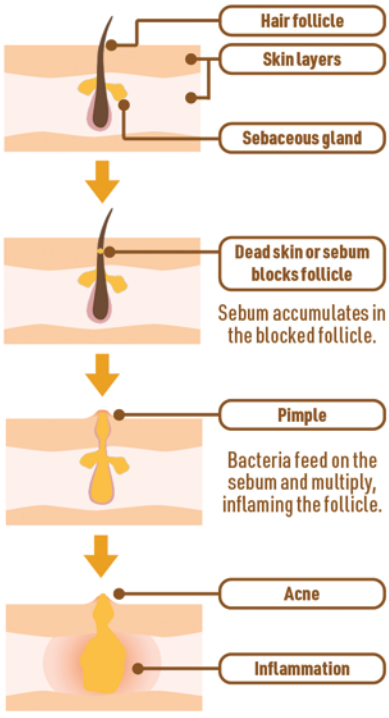
To see more of Brunning's work, go to **compoundchem.com.** To see all of C&EN's Periodic Graphics, visit **cenm.ag/periodicgraphics.**

THE CHEMISTRY OF ACNE TREATMENT

Acne is the bane of teenagers, but it also affects adults. Here we look at the causes of acne and some medications used to treat it.

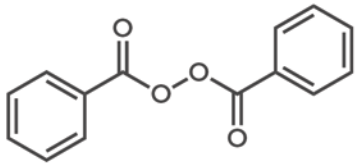
WHAT CAUSES ACNE?

Acne occurs when dead skin or an oily substance called sebum blocks the holes—or follicles—that hair grows from in our skin. Sebum, which is produced by sebaceous glands attached to the follicles, can fuel bacterial infections that can exacerbate acne.



WHAT MEDICATIONS TREAT ACNE?

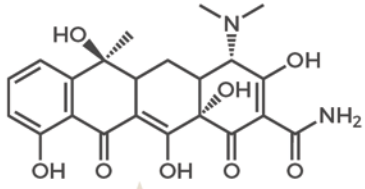
Benzoyl peroxide



Topical use

Benzoyl peroxide is an antiseptic that oxidizes bacterial proteins, killing bacteria on the skin. Benzoyl peroxide makes the skin more sensitive to sunlight, and it can bleach clothes.

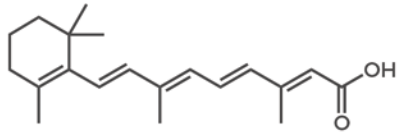
Antibiotics



Tetracycline | Topical and oral use

Erythromycin and clindamycin are topical antibiotics used with benzoyl peroxide to treat acne. People with more severe acne can take tetracyclines orally for several months. Tetracyclines increase skin sensitivity to sunlight and interfere with oral contraceptives.

Retinoids

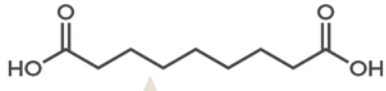


Tretinoin | Topical use

Retinoids like tretinoin stop follicle blockage by regulating the shedding of dead skin cells and have anti-inflammatory effects. Retinoids can initially cause skin irritation and make skin more sensitive to sunlight. Most retinoids are used topically, but doctors prescribe isotretinoin orally for severe acne when other treatments are ineffective.

Other treatments

Azelaic acid is an exfoliant with antibacterial activity. It is used as an alternative to benzoyl peroxide for mild to moderate acne.



Azelaic acid | Topical use

Co-cyprindiol is a hormonal treatment that reduces the production of sebum and is used for severe acne when other medicines are ineffective.

PERIODIC GRAPHICS