How the drug isotretinoin zaps acne

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The most potent drug available for the treatment of acne is 13-cis retinoic acid (13-cis RA; also known as isotretinoin); however, little is known about the mechanism by which it acts.

Insight into the mechanisms by which 13-cis RA combats acne has now been provided by Diane Thiboutot and colleagues, from Pennsylvania State University College of Medicine, Hershey, who analyzed skin biopsies from patients with acne before and after 1 week of treatment with 13-cis RA.

The authors suggested these data might lead to the development of new treatments for acne, which are badly needed as the use of 13-cis RA is limited by its severe side effects.

Initial analysis confirmed previous observations made using cultured cells that 13-cis RA induces a form of cell death known as apoptosis in sebaceous glands, the parts of the skin that are affected in individuals with acne. Further studies revealed that the gene responsible for making the protein NGAL was highly upregulated in human sebaceous glands by 13-cis RA.

As NGAL was found to mediate apoptosis of human sebaceous glands and to be essential for 13-cis RA to mediate apoptosis of human sebaceous glands, the authors suggested that agents that selectively induce NGAL expression in human sebaceous glands might provide a new approach to treating individuals with acne.

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