Topical retinol induces skin changes similar to retinoic acid

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(HealthDay)—Both retinol and retinoic acid have beneficial effects on cellular and molecular properties of the epidermis and dermis, according to a study published online Nov. 18 in the *Journal of Cosmetic Dermatology*.

Rong Kong, Ph.D., from the Amway Corporation in Ada, Mich., and colleagues compared the effects of retinol and retinoic acid on skin structure and skin function-related gene and protein expression. Hematoxylin and eosin staining and in vivo confocal microscopy were used to examine skin histology. Skin gene and protein expression levels were analyzed with real-time reverse transcription polymerase chain reaction and immunohistochemistry. Digital image-based wrinkle analysis was used to assess the efficacy of a retinol formulation in improving skin appearance.

The researchers observed increases in epidermal thickness with four weeks of retinoic acid and retinol treatments. Upregulated gene expression was seen with both treatments for collagen type 1 and collagen type 3; corresponding increases were noted in expression of procollagen I and procollagen III protein. A significant reduction in facial wrinkles was seen in facial image analysis following 12 weeks of retinol application.

"Topical application of retinol significantly affects both cellular and molecular properties of the epidermis and dermis, as shown by skin biopsy and noninvasive imaging analyses," the authors write. "Although the magnitude tends to be smaller, retinol induces similar changes in skin histology, and gene and protein expression as compared to retinoic acid application."

More information: Abstract
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