Green Tea May Complement Retinoids, Evidence Suggests

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Las Vegas — Beware the cosmecutical claims about green tea and its antiaging properties. Although there is strong evidence that green tea contains substances that may ward off UV-related skin damage, it is all from in vitro experiments, Dr. Cherie Ditre said at the annual meeting of the American Society of Cosmetic Dermatology and Aesthetic Surgery. None of it comes from actual patient trials.

“This is all done with artificial skin and artificial skin substrates that do not to be done,” said Dr. Ditre, director of the University of Pennsylvania Health System’s Cosmetic Dermatology and Skin Enhancement Center in Radnor.

With that caveat, Dr. Ditre said that green tea has been shown to have strong antioncogenic properties and may work in a complementary fashion to retinoids. The most important, active component of green tea is considered to be epigallocatechin-3-gallate, or EGCG, which is a polyphenolic compound. It appears to inhibit the generation of intracellular hydrogen peroxide, one of the most active DNA-damaging oxygen species, and the formation of cyclobutane pyrimidine dimer, another source of DNA damage.

In experiments with hairless mice prone to squamous cell carcinoma, application of green tea reduced the development of tumors by 60%, relative to controls (Neoplasia 2003;15:135-44).

In the skin culture systems, topical application of green tea extract of EGCG, at practical doses, has been shown to increase production of tissue inhibitors of matrix metalloproteinases (TIMPs), which contribute to the degradation of collagen, and their levels increase after UV exposure, so they may be an important pathway for sun-induced aging, Dr. Ditre said.

In particular, EGCG was shown to increase production of TIMPs in dermal fibroblasts in response to UV A exposure (J. Dermatol. Sci. 2005;40:195-204). This is different from how retinoids work, she added. Retinoids upregulate collagen synthesis and downregulate matrix metalloproteinase expression. Matrix metalloproteinase expression is mostly increased as a result of UVB exposure.

These differences suggest that using green tea and a retinoid together could be beneficial.

“Perhaps the combination of retinoids with green tea could give us the maximum benefit for collagen preservation and perhaps collagen upregulation,” Dr. Ditre said.

In a recent study reported that although industrial-grade mineral oil may be comedogenic, cosmetic-grade mineral oil clearly is not, and therefore should not be omitted from certain cosmetic formulations because of reputed comedogenicity (J. Cosmet. Dermatol. 2005;42:2-3).

Industrial-grade mineral oil has been used in metal cutting, printing press operating, and cotton and jute spinning, as well as to lubricate machinery. Cutaneous effects such as rashes and acne have been reported in people exposed for prolonged periods to this much less refined form of mineral oil.

Conclusions

Several versatile oils are available for the treatment of different skin conditions. Most of the oils are used in moisturizers. Mineral oil is one of the most effective of the oily ingredients in moisturizers and is used to prevent transepidermal water loss in people with dry skin. It also is an effective ingredient for those with sensitive skin. Significantly, mineral oil does not clog pores or cause acne, despite claims to the contrary.

Like most topical products, oils cannot exert long-lasting effects on the skin. Repeated application is necessary to provide cutaneous benefits.

“Oils are a different class of ingredients,” Dr. Baumann said. “Some are very potent whereas others are less so.”