

Botanical extract protects against UV

Study results intriguing, researchers look to further applications

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New York — An aqueous extract of cat's claw (*Uncaria tomentosa*) appears worthy of further investigation as a sunscreen product, a leading researcher says.

"Cat's claw water extracts that are essentially free of oxindole alkaloids, such as AC-11 (Activar, Optigenex), possess a broad spectrum of biological activity including DNA repair enhancement and anti-inflammatory properties," says Noah Scheinfeld, M.D., J.D., assistant clinical professor of dermatology at Columbia University, N.Y. These two biological mechanisms are key molecular targets in developing treatments that protect skin exposed to UV light from the sun, he adds.

According to Dr. Scheinfeld, topical AC-11 has enhanced human DNA integrity in three fairly recent studies. "They all say essentially the same thing," he tells **Dermatology Times**.

Intriguing studies

In what Dr. Scheinfeld calls perhaps the strongest study, AC-11 decreased oxidative DNA damage in humans.

Specifically, researchers gave a population of 14 volunteers (nine with chronic diseases) AC-11 400 mg/day for four weeks. At study's end, nine volunteers (64 percent) had decreased 8-hydroxyguanine adducts (Sheng Y, Bryngelsson C, Pero RW. *J Ethnopharmacol.* 2000 Feb;69(2):115-126).

Additionally, only one study patient possessed elevated 8-hydroxy-guanine DNA adducts at baseline (22/109 bases), which were reduced to 2/109 bases post-therapy. Dr. Scheinfeld explains that 8-hydroxyguanine is a mutated base pair that leads to DNA defects.

This study shows that AC-11 decreases UV's effects on both single- and double-stranded DNA, according to Dr. Scheinfeld.

"It is somehow protecting the generation of repairs in human DNA" without any adverse effects, he adds.

AC-11 furthermore possesses anti-inflammatory properties, Dr. Scheinfeld notes. As such, he says, "It basically inhibits NF-kappaB, which is a substance involved with inflammation, and it also seems to somehow stop cells from ending up with errors in them."

In another study, AC-11 enhanced DNA repair in human monocytes. In a population of 12 healthy volunteers, eight of whom were treated with AC-11 in doses of 250 or 350 mg/day for six weeks, researchers observed fewer single-strand breaks in WBC DNA after H₂O₂ exposure post-treatment (Pero RW et al. *Phytomedicine.* 2005;12(4):255-263).

In the third study, Dr. Scheinfeld says AC-11 (350 mg/day, four weeks) given to five patients aged 35 to 55 years achieved reductions in 8-hydroxyguanine of nearly 50 percent (Pero RW, Giampapa V, Vojdani A. *J Ant Aging Med.* 2002; 5:345-353).

Current therapies inspired investigation

"There's been a lot of information in the news about sunscreens, with development of better products which block UVA, and about green tea," Dr. Scheinfeld says.

Such developments inspired him to consider what other ingredients one might add to sun blocks or skin creams to inhibit the effects of UV light, he adds.

"AC-11 operates on a novel mechanism, which is to enhance the ability of cells to repair their own DNA," he says. In particular, he says the extract enhances repair, but not formation, of cyclobutyl pyrimidine dimers.

"One of the effects of UV light when it hits the cells is to generate these dimers, which are essentially double defects in the DNA," he explains.

Dr. Scheinfeld says another advantage of AC-11 is that it's a natural product that has been used in a variety of contexts. Additionally, he says the extract has been refined and therefore lacks some of the alkaloid components that made cat's claw difficult to combine with other agents, especially in products for oral use.

Into the future

One day, AC-11 might help patients with xeroderma pigmentosa, Dr. Scheinfeld says.

He says he also hopes to conduct future research to determine if AC-11 can prevent development of actinic keratoses and squamous cell cancers in mouse models.

"For the time being," he notes, "we're going to focus on its topical use. It enhances the integrity of DNA by rendering the DNA less susceptible to damage. Cancer is basically damaged DNA, so if there's no damage to one's DNA, one will not get cancer."

Disclosure: Dr. Scheinfeld is assisting Optigenex in researching AC-11, but presently has no formal financial arrangement with the company.

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