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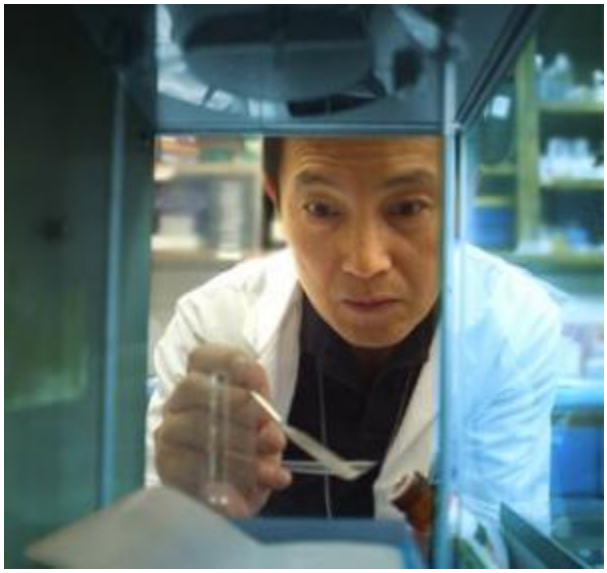
Green Tea Holds Promise As New Treatment For Inflammatory Skin Diseases



Dr Hsu says, "There are no cures for autoimmune diseases. But it is possible that this is a non-toxic way to regulate them. We need further study -- on humans -- to determine the full effects." (Credit: Medical College of Georgia)

ScienceDaily (Aug. 7, 2007) — Green tea could hold promise as a new treatment for skindisorders such as psoriasis and dandruff, Medical College of Georgia researchers say.

Researchers studied an animal model for inflammatory skin diseases, which are often characterized by patches of dry, red, flaky skin caused by the inflammation and overproduction of skin cells. Those treated with green tea showed slower growth of skin cells and the presence of a gene that regulates the cells' life cycles.

"Psoriasis, an autoimmune disease, causes the skin to become thicker because the growth of skin cells is out of control," says Dr. Stephen Hsu, an oral biologist in the MCG School of Dentistry and lead investigator on the study published in the Aug. 18 edition of Experimental Dermatology. "In psoriasis, immune cells, which usually protect against

infection, instead trigger the release of cytokines, which causes inflammation and the overproduction of skin cells."

Other autoimmune diseases with similar side effects include lupus, which can lead to skin lesions, and dandruff.

Green tea, already shown to suppress inflammation, helps by regulating the expression of Caspase-14, a protein in genes that regulates the life cycle of a skin cell.

"That marker guides cells by telling them when to differentiate, die off and form a skin barrier," Dr. Hsu says. "In people with psoriasis, that process is interrupted and the skin cells don't die before more are created and the resulting lesions form."

Animal models treated with green tea also showed reduced levels of proliferating cell nuclear antigen, a gene expressed when skin cells multiply. In psoriasis, the gene is over-expressed and speeds production of skin cells.

"Before treatment, the antigen, PCNA, was present in all layers of the skin," Dr. Hsu says. "Typically, PCNA is only found in the basal layer, the innermost layer where skin cells continually divide and new cells push the older ones to the skin surface, where they eventually slough off. After being treated with green tea, the animal models showed near-normal levels of PCNA in only the basal layers."

This research is important because some treatments for psoriasis and dandruff can have dangerous side effects, he says.

"The traditional treatment of ultraviolet light and medication, while it can control the lesions and be used long term, may cause squamous cell carcinoma – the second most common form of skin cancer," Dr. Hsu says. "Some of the most effective anti-dandruff shampoos also have carcinogens in them. While the U.S. Food and Drug Administration allows that in small amounts, the bottom line is that we don't know the long-term effects of using those products continuously."

Green tea, which is plant-derived, may be an alternative, he says. But scientists must work to overcome some barriers with the treatment.

The chemicals in green tea are so active that they are oxidized too quickly when mixed with other ingredients. They also dissolve in water, which cannot penetrate the skin's barrier.

Researchers are looking for a balanced formula that can dissolve in fats, which can permeate the skin, Dr. Hsu says.

Adapted from materials provided by Medical College of Georgia.