

Role seen for cannabis in helping to alleviate allergic skin disease

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Administering a substance found in the cannabis plant can help the body's natural protective system alleviate an allergic skin disease (allergic contact dermatitis), an international group of researchers from Germany, Israel, Italy, Switzerland and the U.S. has found.

Allergic contact dermatitis is caused by reaction to something that directly contacts the skin. Many different substances (allergens) can cause allergic contact dermatitis. Usually these substances cause no trouble for most people, but if the skin is sensitive or allergic to the substance, any exposure will produce a rash, which may become very severe. Allergic contact dermatitis affects about 5 percent of men and 11 percent of women in industrialized countries and is one of the leading causes for occupational diseases.

An article describing the work of the international research group, led by Dr Andreas Zimmer from the University of Bonn, was published recently in the journal *Science*. The article deals with alleviating allergic skin disease through what is called the endocannabinoid system. Among the members of the group is Prof. Raphael Mechoulam of the Hebrew University of Jerusalem School of Pharmacy.

In earlier work, Prof. Mechoulam's research group at the Hebrew University isolated two naturally occurring cannabinoid (cannabis-like) components – one from the brain, named anandamide (from the word ananda, meaning supreme joy in Sanskrit), and another from the intestines named 2-AG. These two cannabinoids, plus their receptors and various enzymes that are involved in the cannabinoids' syntheses and degradations, comprise the endocannabinoid system. These materials have similar effects to those of the active components in hashish and marijuana, produced from the cannabis plant.

Research by groups throughout the world has

since shown that the endocannabinoid system is involved in many physiological processes, including the protective reaction of the mammalian body to a long list of neurological diseases, such as multiple sclerosis, Alzheimer's and Parkinson's.

In the article in *Science*, the researchers detail how the endocannabinoid system serves as a major regulator of cutaneous (skin) contact hypersensitivity (CHS) in a mouse model. In this model, they showed, for example, that mice lacking cannabinoid receptors display exacerbated inflammatory skin responses to an allergen.

Because the data indicate that enhanced activation of the endocannabinoid system may function to dampen the CHS response, the researchers administered cannabinoids such as tetrahydrocannabinol (THC), a constituent derived from the cannabis plant, to the experimental animals. Their findings showed that the THC significantly decreased the allergic reaction in comparison to untreated mice.

In order to better understand the molecular mechanism that may contribute to the increased CHS in cannabinoid-receptor deficient mice, the researchers performed a series of experiments which showed that mouse skin cells produce a specific chemical (a chemokine) which is involved in the annoying disease reaction. Activation of the endocannabinoid system in the skin upon exposure to a contact allergen lowers the allergic responses through modulating the production of this chemokine.

The results thus clearly show a protective role for the endocannabinoid system in contact allergy in the skin and suggest that development of cannabinoid compounds based on elements produced from the cannabis plant could enhance therapeutic treatment for humans.

Source: The Hebrew University of Jerusalem

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