

How do ketogenic diets affect skin inflammation?

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Not all fats are equal in how they affect our skin, according to a new study in the *Journal of Investigative Dermatology*. The investigators found that different ketogenic diets impacted skin inflammation differently in psoriasiform-like skin inflammation in mice. Ketogenic diets heavy in medium-chain triglycerides (MCTs) such as coconut, especially in combination with omega-3 fatty acids from fish oil and plant sources like nuts and seeds, exacerbated psoriasis.

"This study leads to a broader understanding of possible effects of ketogenic diets with a very [high fat content](#) on [skin inflammation](#) and underlines the importance of the composition of fatty acids in the diet," explained co-lead investigator, Barbara Kofler, Ph.D., Research Program for Receptor Biochemistry and Tumor Metabolism, Department of Pediatrics, Paracelsus Medical University, Salzburg, Austria. "We found that a well-balanced ketogenic diet, limited primarily to long-chain triglycerides (LCTs) like [olive oil](#), soybean oil, fish, nuts, avocado, and meats, does not exacerbate skin inflammation. However, ketogenic diets containing high amounts of MCTs especially in combination with omega-3 fatty acids, should be used with caution since they may aggravate preexisting skin inflammatory conditions."

Ketogenic diets are increasingly popular because of their promise to treat a number of diseases and promote weight loss. They are currently being evaluated as a potential therapy in a variety of diseases and have been suggested to act as an anti-inflammatory in certain conditions. Dietary products containing coconut oil (high in MCTs) or [fish oil](#) (high in

omega-3 fatty acids), consumed as part of a ketogenic diet, are marketed and used by the general population because of their reported health promoting effects.

Previous studies have indicated that high-fat diets with a substantial amount of carbohydrates promote the progression of psoriasiform-like skin inflammation and development of spontaneous dermatitis in mice. The investigators therefore hypothesized that high-fat ketogenic diets would dampen psoriasiform-like skin inflammation progression and that partial supplementation of LCT with MCT and/or [omega-3 fatty acids](#) would further enhance these effects. Although the study did not confirm that hypothesis, it showed that an LCT-based ketogenic diet does not worsen skin inflammation.

Co-lead investigator Roland Lang, Ph.D., Department of Dermatology, Paracelsus Medical University, Salzburg, Austria, elaborated on the study's results, "Ketogenic diets supplemented with MCTs not only induce the expression of pro-inflammatory cytokines, but also lead to an accumulation of neutrophils in the skin resulting in a worse clinical appearance of the skin of the mice. Neutrophils are of particular interest since they are known to express a receptor for MCTs and therefore a ketogenic diet containing MCTs may have an impact on other neutrophil-mediated diseases not limited to the skin."

Mice used in the study were fed an extremely high-fat (77 percent) ketogenic diet, which is uncommon except for patients following a strict regime for medical conditions like drug-resistant epilepsy. "I think most people following a ketogenic [diet](#) don't need to worry about unwanted skin inflammation side effects. However, patients with psoriasis should not consider a [ketogenic diet](#) an adjuvant therapeutic option, noted Dr. Kofler."

More information: "The Influence of Ketogenic Diets on

Psoriasiform-Like Skin Inflammation," *Journal of Investigative Dermatology* (2019). [DOI: 10.1016/j.jid.2019.07.718](https://doi.org/10.1016/j.jid.2019.07.718)

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