

Dietary fat impacts autoimmune flare-ups in mice

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Dietary fat may impact the severity and duration of autoimmune flare-ups, suggests a study published on October 20 in the journal *Immunity*. Adjusting the length of fatty acids consumed by mice altered the function of T helper cells in the gut—either intensifying or alleviating symptoms in an animal model of the autoimmune disease (i.e., multiple sclerosis).

A team led by Ralf Linker, of Friedrich-Alexander-University Erlangen-Nuremberg and his colleague Aiden Haghikia from the Ruhr-University Bochum in Germany compared in mice the effects of short-chain fatty acids, which are solely metabolized by gut bacteria and are typically found in fiber-rich diets, with the effects of long-chain fatty acids, the most abundant component of western diets.

They found that long-chain fatty acids, such as lauric acid and palmitic acid, promoted the development and release of proinflammatory T cells from the intestinal wall to other areas in the body, including the brain. This caused more severe disease in the mice. On the contrary, short-chain fatty acids, such as propionate, promoted the development and propagation of regulatory T cells that kept the immune response in check. This ameliorated the disease in the animals.

None of the effects of dietary [fatty acids](#) were seen in animals whose intestines were made germ-free, suggesting that [gut bacteria](#) are directly involved. Further experiments showed that the metabolic products of the bacteria, rather than certain bacterial strains, were important.

"Most approved immunotherapies weaken or block proinflammatory components of the immune system, but by strengthening regulatory pathways, for example by using propionate as a supplement to established drugs, therapies could be further optimized," Linker says.

"It is now our plan to employ our gained insights to

develop innovative dietary add-on therapies to established immunotherapies in [multiple sclerosis](#)," Haghikia adds.

More information: *Immunity*, Haghikia and Jörg et al.: "Dietary Fatty Acids Directly Impact Central Nervous System Autoimmunity via the Small Intestine" [dx.doi.org/10.1016/j.immuni.2015.09.007](https://doi.org/10.1016/j.immuni.2015.09.007)

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