Medical Xpress

Fatty acid may help combat multiple sclerosis

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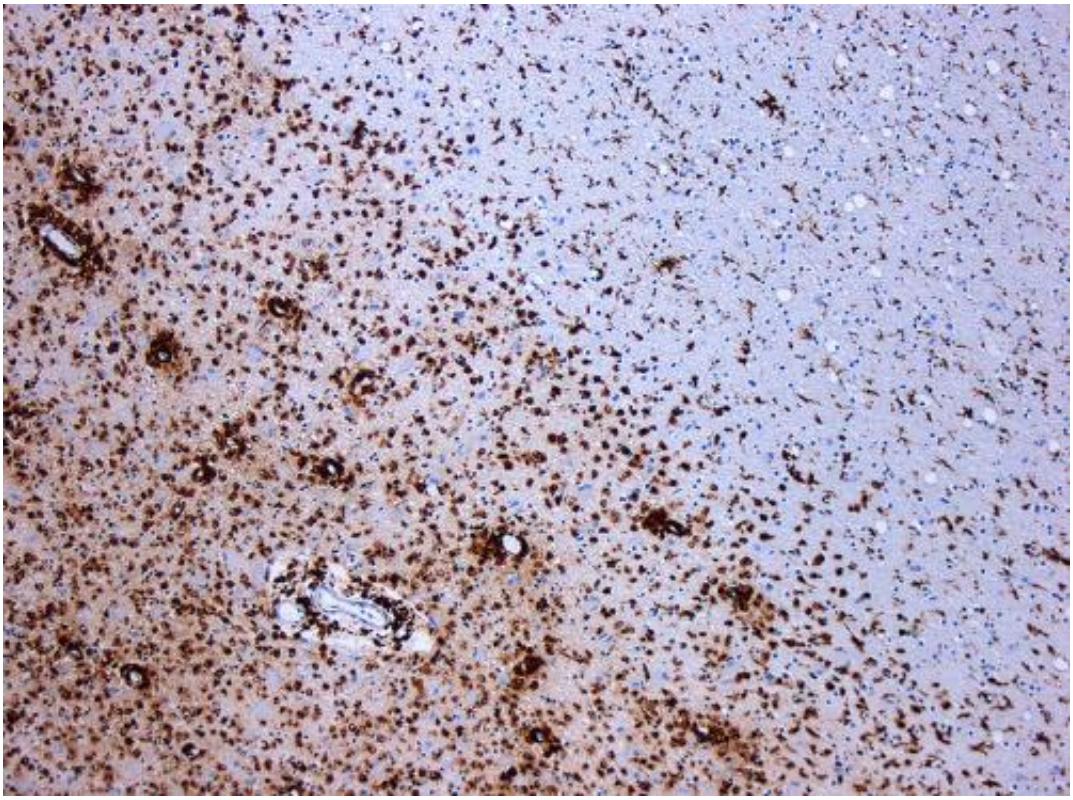

Demyelination by MS. The CD68 colored tissue shows several macrophages in the area of the lesion. Original scale 1:100. Credit: CC BY-SA 3.0 Marvin 101/Wikipedia

The abnormal immune system response that causes multiple sclerosis (MS) by attacking and damaging the central nervous system can be triggered by the lack of a specific fatty acid in fat tissue, according to a new Yale study. The finding suggests that dietary change might help

treat some people with the autoimmune disease.

The study was published Jan. 19 in *The Journal of Clinical Investigation*.

Fat tissue in patients diagnosed with MS lack normal levels of oleic acid, a monounsaturated fatty acid found at high levels in, for instance, cooking oils, meats (beef, chicken, and pork), cheese, nuts, sunflower seeds, eggs, pasta, milk, olives, and avocados, according to the study.

This lack of oleic acids leads to a loss of the metabolic sensors that activate T cells, that mediate the immune system's response to infectious disease, the Yale team found. Without the suppressing effects of these regulatory T cells, the immune system can attack healthy central nervous system cells and cause the vision loss, pain, lack of coordination and other debilitating symptoms of MS.

When researchers introduced oleic acids into the fatty tissue of MS patients in laboratory experiments, levels of regulatory T cells increased, they found.

"We've known for a while that both genetics and the environment play a role in the development of MS," said senior author David Hafler, William S. and Lois Stiles Edgerly Professor of Neurology and professor of immunobiology and chair of the Department of Neurology. "This paper suggests that one of environmental factors involved is diet."

Hafler noted that obesity triggers unhealthy levels of inflammation and is a known risk factor for MS, an observation that led him to study the role of diet in MS.

He stressed, however, that more study is necessary to determine whether eating a diet high in oleic acid can help some MS patients.

More information: Saige L. Pompura et al, Oleic acid restores suppressive defects in tissue-resident FOXP3 Tregs from patients with multiple sclerosis, *Journal of Clinical Investigation* (2020). DOI: 10.1172/JCI138519

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