

Omega 3 helps the gut stay healthy, study finds

11 September 2017



Credit: University of Nottingham

Taking omega-3 as part of a healthy diet with plenty of fibre and probiotic foods can improve the diversity of the gut microbiome according to a new study by researchers at the University of Nottingham and King's College London.

The group of scientists which includes experts from the School of Medicine at Nottingham examined the [gut microbiome](#) of a large cohort of middle-aged and elderly women. They tested the diversity and abundance of 'good' bacteria against their intake of [omega-3 fatty acids](#) – found in fish oil – and their blood serum levels of omega-3 fatty acids.

The study, published in *Scientific Reports*, found that the women who had a higher dietary intake of omega-3 and higher serum levels had a more diverse gut microbiome. A more diverse microbiome is associated with a number of health benefits, including lower risk of diabetes, obesity and inflammatory gut diseases like colitis or Crohn's.

Leading the study, Associate Professor and Reader, Dr Ana Valdes, who is affiliated to the NIHR Nottingham Biomedical Research Centre, said: "The [human gut](#) is receiving a lot of attention in medical research as it is increasingly linked to a wide variety of health issues. Our digestive systems are home to trillions of microbes, most of which are beneficial in that they play a vital role in

our digestion, immune system and even regulate our weight.

"Our study is the largest to date to examine the relationship between omega-3 fatty acids and the composition of the gut microbiome. This cohort of 876 volunteer women had previously been used to investigate the human genetic contribution to the gut microbiome in relation to weight gain and disease. We examined their food intake of omega-3 fatty acids using food frequency questionnaires and found these data, together with their [serum levels](#) of omega-3, were strongly associated with the diversity and number of species of healthy bacteria in the gut."

Dr Cristina Menni, from King's College London added: "We also found that specific bacteria that have been linked to lower inflammation and lower risk of obesity are increased in people who have a higher intake of omega-3 fatty acids. We further explored how this related to compounds in faeces and found that, in addition to fish protein and omega-3, high levels of omega-3 in blood are correlated with high levels of a compound called N-carbonylglutamate (NCG) in the gut. This compound has been shown in animals to reduce oxidative stress in the gut. We believe that some of the good effects of omega-3 in the gut may be due to the fact that omega 3 induces bacteria to produce this substance."

Previous wider research has observed positive effects on health from omega-3 fatty acids on insulin resistance in diabetes, hypertension (high blood pressure), arthritis, thrombosis (blood clots), some cancers and cognitive decline. This new study has added weight to the growing global body of evidence to suggest that omega-3 also appears to improve the gut [microbiome](#) both in its diversity and composition.

More information: Cristina Menni et al. Omega-3 fatty acids correlate with gut microbiome diversity

and production of N-carbamylglutamate in middle aged and elderly women, *Scientific Reports* (2017).
[DOI: 10.1038/s41598-017-10382-2](https://doi.org/10.1038/s41598-017-10382-2)

Provided by University of Nottingham

APA citation: Omega 3 helps the gut stay healthy, study finds (2017, September 11) retrieved 22 June 2018 from <https://medicalxpress.com/news/2017-09-omega-gut-healthy.html>

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