

Nut consumption causes changes in sperm DNA function, study shows

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Researchers have evaluated for the first time the effect of a short/middle-term consumption of a mixture of tree nuts (almonds, hazelnuts and walnuts) on sperm DNA methylation patterns in healthy individuals reporting eating a Western-style diet. Credit: ©URV

Many environmental and lifestyle factors have been implicated in the decline of sperm quality, with diet being one of the most plausible factors identified in recent years. Moreover, several studies have reported a close association between the alteration of specific sperm DNA methylation signatures and semen quality. To date, however, no randomized clinical trials (RCT) have been published that assess the effects of diet on these changes in the function of sperm DNA.

Researchers from the Human Nutrition Unit of the Universitat Rovira i Virgili, the Pere Virgili Institute of Health and CIBERobn (led by Dr. Jordi Salas-Salvadó), and researchers from the University of Utah (led by Dr. Douglas T. Carrell) have evaluated for the first time the effect of a short/middle-term consumption of a mixture of tree nuts (almonds, hazelnuts and walnuts) on [sperm](#) DNA methylation patterns in healthy individuals reporting eating a Western-style diet. The analysis was done within the framework of the FERTINUTS trial, an RCT led by Dr. Mónica Bulló; and Dr. Albert Salas-Huetos, the results of which were published in 2018. The research revealed that the inclusion of a mix of nuts for 14 weeks significantly improved the sperm count, viability, motility and morphology.

This new study was conducted in 72 healthy, non-smoking young participants from the FERTINUTS trial (nut group, n=48; control group, n=24) and has recently been published in the scientific journal *Andrology*. The researchers observed that the methylation of 36 genomic regions was significantly different between baseline and the end of the trial only in the group that consumed nuts, and 97.2% of the regions displayed hypermethylation.

According to the researchers, these findings provide the first evidence that adding nuts to a regular Western-style diet impacts sperm DNA methylation in specific regions.

Albert Salas-Huetos (who is now working at Harvard University, U.S.), the first author of the article says, "This work demonstrates that there are some sensitive regions of the sperm epigenome that respond to diet, and which can result in changes in sperm and in its ability to fertilize." Researchers also point out that the potential health benefits of the findings warrant further study to verify the results found in other populations.

More information: Albert Salas-Huetos et al, Sperm DNA methylation changes after short-term nut supplementation in healthy men consuming a Western-style diet, *Andrology* (2020). [DOI: 10.1111/andr.12911](https://doi.org/10.1111/andr.12911)

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