

Depression linked to reduced arginine bioavailability

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People suffering from major depressive disorder, MDD, have reduced arginine levels, a new study from the University of Eastern Finland shows. Arginine is an amino acid which the body uses to produce, e.g., nitric oxide. Nitric oxide, in turn, is a nervous system and immune defence mediator, and it also plays a role in vascular regulation. The global arginine bioavailability ratio, GABR, is an indicator of the body's arginine levels, and the ratio has previously been used to measure the body's capacity to produce nitric oxide. Reduced arginine bioavailability is also known to be an independent risk factor of cardiovascular diseases.

Published in *Journal of Affective Disorders*, the study shows that [people](#) suffering from MDD have reduced arginine bioavailability.

"It is possible that depression-induced inflammatory responses lead to reduced arginine levels. This may result in insufficient production of [nitric oxide](#) for the needs of the nervous system and circulation. However, we don't know yet what exactly causes reduced arginine bioavailability in people with depression," says Doctoral Student Toni Ali-Sisto, the lead author of the study.

The study carried out by the University of Eastern Finland and Kuopio University Hospital involved 99 adults with diagnosed [major depressive disorder](#) and 253 non-depressed controls. The concentrations of three amino acids, namely arginine, citrulline and ornithine, were analysed from their fasting glucose samples, and this data was used to calculate their GABRs. Symmetric and asymmetric dimethylarginine

concentrations were also measured, as they both play a role in the production of nitric oxide. The findings were then compared between the depressed and the non-depressed controls. The study also analysed whether these concentrations changed in people with depression during a follow-up of eight months, and whether remission of depression had an effect on the concentrations.

"Although our study shows that people with depression have reduced arginine bioavailability, this doesn't mean that taking an arginine supplement would protect against depression. That's an area for further research," Ali-Sisto says.

People with depression had weaker arginine bioavailability than their non-depressed controls. The study did not find significant differences in the symmetric and asymmetric dimethylarginine concentrations. The use of anti-depressants or anti-psychotics did not affect the concentrations, either.

Contrary to the researchers' expectations, there were no clear differences in the concentrations measured from people who had recovered from depression and people who remained depressed.

"Arginine [bioavailability](#) was slightly higher in people who had recovered from depression than in people who remained depressed. However, a more extensive set of data and a longer follow-up period are necessary for estimating arginine's role in [depression](#) recovery."

More information: Toni Ali-Sisto et al. Global arginine bioavailability ratio is decreased in patients with major depressive disorder, *Journal of Affective Disorders* (2017). [DOI: 10.1016/j.jad.2017.12.030](https://doi.org/10.1016/j.jad.2017.12.030)

Provided by University of Eastern Finland

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