

# A coffee with your doughnut could protect against Alzheimer's disease

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A daily dose of caffeine blocks the disruptive effects of high cholesterol that scientists have linked to Alzheimer's disease. A study in the open access publication, Journal of Neuroinflammation revealed that caffeine equivalent to just one cup of coffee a day could protect the blood-brain barrier (BBB) from damage that occurred with a high-fat diet.

The BBB protects the central nervous system from the rest of the body's circulation, providing the brain with its own regulated microenvironment. Previous studies have shown that high levels of cholesterol break down the BBB which can then no longer protect the central nervous system from the damage caused by blood borne contamination. BBB leakage occurs in a variety of neurological disorders such as Alzheimer's disease.

In this study, researchers from the University of North Dakota School of Medicine and Health Sciences gave rabbits 3 mg caffeine each day – the equivalent of a daily cup of coffee for an average-sized person. The rabbits were fed a cholesterol-enriched diet during this time.

After 12 weeks a number of laboratory tests showed that the BBB was significantly more intact in rabbits receiving a daily dose of caffeine.

“Caffeine appears to block several of the disruptive effects of cholesterol that make the blood-brain barrier leaky,” says Jonathan Geiger, University of North Dakota School of Medicine and Health Sciences. “High levels of cholesterol are a risk factor for Alzheimer's

disease, perhaps by compromising the protective nature of the blood-brain barrier. For the first time we have shown that chronic ingestion of caffeine protects the BBB from cholesterol-induced leakage.”

Caffeine appears to protect BBB breakdown by maintaining the expression levels of tight junction proteins. These proteins bind the cells of the BBB tightly to each other to stop unwanted molecules crossing into the central nervous system.

The findings confirm and extend results from other studies showing that caffeine intake protects against memory loss in aging and in Alzheimer’s disease.

“Caffeine is a safe and readily available drug and its ability to stabilise the blood-brain barrier means it could have an important part to play in therapies against neurological disorders,” says Geiger.

Source: BioMed Central

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