

Ketogenic diet exhibits anti-inflammatory properties

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Objective – Anti-epileptic drugs (AEDs) are effective in only two-thirds of the population with epilepsy and alternative therapies need therefore to be explored. The ketogenic diet, a high-fat, low-carbohydrate diet, was found to be useful in refractory epilepsy (i.e. seizures that do not respond well to medication) and has been shown to improve cognition in people with epilepsy. However, the mechanism by which the ketogenic diet has an effect on seizures is not fully understood. Since a role for inflammation in seizure disorders has been proposed, the authors of a [recent study](#) sought to determine whether the ketogenic diet might be beneficial by reducing inflammation in the brain.

Results – The scientists used experimental rats to test this hypothesis. Rats were divided into two groups – those given a normal diet and those on a ketogenic diet. In order to study inflammation and effects of the ketogenic diet on inflammation, the scientists injected all rats with lipopolysaccharide (LPS) – this compound increases body temperature and causes inflammation. Of interest is the fact that high body temperature can sometimes lead to a seizure. The authors found that LPS injected increased body temperature in rats given a normal diet, but not in those on the ketogenic diet. Injection of LPS causes an increase in inflammatory molecules and rats on the ketogenic diet showed a reduction in these inflammatory molecules.

Interpretation – The experiments show that the ketogenic diet decreases inflammation; this is perhaps the reason for its efficacy in epilepsy.

Short summary for scientists – Dietary therapies like the ketogenic diet have been shown to be beneficial in epilepsy. In a [recent study](#), scientists hypothesized that efficacy of the ketogenic diet is due to a decrease in inflammation. After being administered a regular diet or the ketogenic diet, rats were injected lipopolysaccharide (LPS) and downstream reactions were measured. Rats on the normal diet showed an increase in body temperature, whereas those on the ketogenic diet did not. Rats on the ketogenic diet also showed a decrease in proinflammatory cytokines in the blood (e.g TNF α and IL-1 β) and brain in response to LPS.

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