

CoQ10 for pregnant rats reverses diet-induced retinal damage in offspring

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New research in rats suggests a common antioxidant supplement may protect the next generation from a leading cause of blindness stemming from a high-sugar diet during pregnancy. The study is published ahead of print in the *American Journal of Physiology-Endocrinology and Metabolism*.

Retinopathy, which is damage to the light-sensing organ in the back of the eye (retina), is a common and irreversible cause of blindness. Many people are not diagnosed with [retinal damage](#) until later stages of the condition. Previous research has shown that [diet](#) can play a role in retinal function. Separate studies have also found that consuming a high-fructose diet during pregnancy may lead to chronic health conditions—such as diabetes—later in the life of the next generation. Fructose is a simple sugar that is also a component of table sugar.

However, less is known about the effects of a high-fructose diet on retinopathy.

Researchers of a new study examined the offspring of female rats who were given either a normal or high-fructose diet during pregnancy. After weaning, half of the offspring were given coenzyme Q10 supplements for four weeks. Coenzyme Q10, an antioxidant the body makes naturally, is also found in fish, meat and nuts. The supplement is widely available over the counter.

The research team analyzed the retinas and mitochondria—the "energy centers" of the cells—of the two offspring groups and found decreased function of both in the animals whose mothers followed the high-fructose diet during gestation, a phenomenon not identified previously.

"Mitochondria play an important role in maintaining [retinal function](#)," the researchers wrote. They found the young rats treated with coenzyme Q10 showed a reversal of retinal damage that was induced by the mothers' diet. In addition, mitochondrial function was restored in the treated rodents by strengthening impaired nerve impulses (called synapses).

"[Coenzyme Q10] treatment of adult offspring may play a beneficial role in intervening in the maternal [high-fructose diet]–induced early onset of retinopathy via the protection of mitochondrial function and synaptic plasticity," the researchers wrote. It is not yet clear whether the supplement may protect against retinal damage in people who do not eat a lot of sugar, but the findings may be taken as "an appeal to the general public to be aware of what they eat when in pregnancy and lactation," said Kay Li-Hui Wu, Ph.D., DVM, corresponding author of the study.

"Maternal high fructose diet induced early onset retinopathy via the suppression of [synaptic plasticity](#) mediated by the mitochondrial dysfunction" is published ahead of print in the

American Journal of Physiology-Endocrinology and Metabolism.

More information: Hsiu-Mei Huang et al, Maternal high fructose diet induced early onset retinopathy via the suppression of synaptic plasticity mediated by the mitochondrial dysfunction, *American Journal of Physiology-Endocrinology and Metabolism* (2021). DOI: [10.1152/ajpendo.00001.2021](https://doi.org/10.1152/ajpendo.00001.2021)

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