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Want to slow aging? New research suggests it takes more than antioxidants

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Don't put down the red wine and vitamins just yet, but if you're taking antioxidants because you hope to live longer, consider this: a new study published in the June 2010 issue of the journal *Genetics* casts doubt on the theory that oxidative stress to our tissues shortens lifespan. That's because researchers from McGill University in Canada have identified mutations in 10 different genes of worms (genes believed to have counterparts in humans) that extend their lifespan without reducing the level of oxidative stress the worms suffer. The results contradict the popular theory that production of toxic reactive oxygen species in tissues is responsible for aging.

"We hope that our study will help in tempering the undue emphasis put on the notion that oxidative stress causes aging and thus that antioxidants could combat aging," said Siegfried Hekimi, Ph.D, the senior author of the study from the Department of Biology at McGill University in Montreal. "We also hope that the genes we have discovered can be used in the future to modulate energy metabolism in a way that can help delay the health issues linked to aging, and possibly increase lifespan itself."

To make their discovery, the scientists exposed a passel of worms (Caenorhabditis elegans) to a chemical that causes random changes in its DNA, and looked among the mutagenized worms for those appearing to have a slow rate of metabolism, manifested in their slow development and slow behavioral responses. They then identified the mutations in these worms that caused this effect, revealing 10 distinct genes involved in metabolism. The scientists' expected that the slowly metabolizing

worms would have less oxidative stress, but to the investigators' surprise that was not the case. This suggests that a slow rate of living and reduced energy metabolism is sufficient to increase longevity, even when oxidative stress is not reduced.

"It looks like there's more truth to the cliché, 'slow and steady wins the race,' than we imagined," said Mark Johnston, Editor-in-Chief of the journal *Genetics*. "This research suggests that if we just eat less, we may not have to suffer eating all that broccoli simply for its antioxidants."

More information: http://www.genetics.org

Provided by Genetics Society of America