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Federation of American Societies for Experimental Biology

New year, new vitamin C discovery: It 'cures' mice with accelerated aging disease

New research in the FASEB Journal reports vitamin C reverses abnormalities caused by Werner syndrome gene, including cancer, obesity, diabetes, heart failure and high cholesterol

A new research discovery published in the January 2010 print issue of the *FASEB Journal* (<http://www.fasebj.org>) suggests that treatments for disorders that cause accelerated aging, particularly Werner's syndrome, might come straight from the family medicine chest. In the research report, a team of Canadian scientists show that vitamin C stops and even reverses accelerated aging in a mouse model of Werner's syndrome, but the discovery may also be applicable to other progeroid syndromes. People with Werner's syndrome begin to show signs of accelerated aging in their 20s and develop age-related diseases and generally die before the age of 50.

"Our study clearly indicates that a healthy organism or individuals with no health problems do not require a large amount of vitamin C in order to increase their lifespan, especially if they have a balanced diet and they exercise," said Michel Lebel, Ph.D., co-author of the study from the Centre de Recherche en Cancerologie in Quebec, Canada. "An organism or individual with a mutation in the WRN gene or any gene affected by the WRN protein, and thus predisposes them to several age-related diseases, may benefit from a diet with the appropriate amount of vitamin C."

Scientists treated both normal mice and mice with a mutation in the gene responsible for Werner's syndrome (WRN gene) with vitamin C in drinking water. Before treatment, the mice with a mutated WRN gene were fat, diabetic, and developing heart disease and cancer. After treatment, the mutant mice were as healthy as the normal mice and lived a normal lifespan. Vitamin C also improved how the mice stored and burned fat, decreased tissue inflammation and decreased oxidative stress in the WRN mice. The healthy mice did not appear to benefit from vitamin C.

"Vitamin C has become one of the most misunderstood substances in our medicine cabinets and food," said Gerald Weissmann, M.D., Editor-in-Chief of *the FASEB Journal*. "This study and others like it help explain how and why this chemical can help to defend some, but certainly not all, people from premature senescence."

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Details: Laurent Massip, Chantal Garand, Eric R. Paquet, Victoria C. Cogger, Jennifer N. O'Reilly, Leslee Tworek, Avril Hatherell, Carla G. Taylor, Eric Thorin, Peter Zahradka, David G. Le Couteur, and Michel Lebel. Vitamin C restores healthy aging in a mouse model for Werner syndrome. *FASEB J.* 2010 24: 158-172. <http://www.fasebj.org/cgi/content/abstract/24/1/158>