Anti-aging hormone actions revealed

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Scientists say the recently discovered anti-aging hormone "Klotho" acts by increasing a cell's ability to detoxify harmful reactive oxygen species.

The klotho gene -- named after the Greek goddess who spins life's thread -- is associated with preventing aging in mammals. The klotho gene product, the Klotho protein, is secreted in the blood and functions as an anti-aging hormone.

A defect in the klotho gene in mice leads to a syndrome closely resembling human aging, while over-expression of the gene extends lifespan in mice.

Now Makoto Kuro-o, assistant professor of pathology at the University of Texas Southwestern Medical Center, has discovered one way in which Klotho extends lifespan. Using cultured cells and transgenic mice, the researcher showed Klotho increases resistance to oxidative stress.

"Increased longevity is always associated with increased resistance to oxidative stress," said Kuro-o. "Oxidative stress causes the accumulation of oxidative damage to important biological macromolecules, such as DNA, lipids, and proteins that would result in functional deterioration of the cell, which eventually causes aging."

The research appears as the "Paper of the Week" in the Nov. 11 issue of the Journal of Biological Chemistry.