

Anti-aging gene linked to high blood pressure

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Dr. Zhongjie Sun and his team of researchers at the University of Oklahoma Health Sciences Center have linked an anti-aging gene to hypertension and reversed kidney damage. Credit: OU Medicine

Researchers at the University of Oklahoma Health Sciences Center have shown the first link between a newly discovered anti-aging gene and high blood pressure. The results, which appear this month in the journal *Hypertension*, offer new clues on how we age and how we might live longer.

Persistent hypertension, or high blood pressure, is a risk factor for stroke, heart attack, heart failure, arterial aneurysm and is the leading cause of chronic kidney failure. Even a modest elevation of arterial blood pressure leads to shortened life expectancy.

Researchers, led by principal investigator Zhongjie Sun, tested the effect of an anti-aging gene called *klotho* on reducing hypertension. They found that by increasing the expression of the gene in laboratory models, they not only stopped blood pressure from continuing to rise, but succeeded in lowering it. Perhaps most impressive was the complete reversal of [kidney damage](#), which is associated with prolonged high blood pressure and often leads to kidney failure.

"One single injection of the *klotho* gene can reduce hypertension for at least 12 weeks and possibly longer. *Klotho* is also available as a protein and, conceivably, we could ingest it as a powder much like we do with protein drinks," said Sun, M.D., Ph.D., a cardiovascular expert at the OU College of Medicine.

Scientists have been working with the *klotho* gene and its link to aging since 1997 when it was discovered by Japanese scientists. This is the first study showing that a decline in *klotho* [protein](#) level may be involved in the progression of hypertension and kidney damage, Sun said. With age, the *klotho* level decreases while the prevalence of hypertension increases.

Researchers used one injection of the *klotho* gene in hypertensive research models and were able to markedly reduce blood pressure by the second week. It continued to decline steadily for the length of the project - 12 weeks. The *klotho* gene was delivered with a safe [viral vector](#) that is currently used for gene therapy. The virus is already approved by the U.S. Food and Drug Administration for use in humans.

Researchers are studying the gene's effect for longer periods to test its ability to return [blood pressure](#) levels to normal. They also are looking at whether *klotho* can prevent [hypertension](#).

[More information:](#) The research is available online at

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Source: University of Oklahoma

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