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LOW LEVELS OF CIRCULATING PROTEIN LINKED WITH HEART PROBLEMS IN MICE WITH KIDNEY DISEASE

Findings suggest potential treatment strategy to protect kidney disease patients' heart health

Highlights

- Decreased blood levels of a protein called Klotho increases the risk of heart disease in mice with chronic kidney disease.
- If confirmed in humans, increasing Klotho levels may help protect the hearts of patients with chronic kidney disease.

More than 20 million people in the United States have chronic kidney disease, and heart disease is the leading cause of death in these patients.

Washington, DC (December 4, 2014) — Decreased blood levels of a kidney-derived protein called Klotho increases the risk of heart disease in mice with kidney disease, according to a study appearing in an upcoming issue of the *Journal of the American Society of Nephrology* (JASN). If the findings are confirmed in humans, Klotho replacement therapy may help protect the heart health of patients with poor kidney function.

Heart disease is the leading cause of death in patients with chronic kidney disease (CKD). Also, cardiac hypertrophy (thickening of the heart muscle) occurs in up to 95% of patients with CKD and increases their risk for cardiovascular death. Through decades of research, investigators have found several risk factors for CKD-associated cardiac hypertrophy, which is also called uremic cardiomyopathy. Despite correction of all these known factors, however, many patients with CKD still develop uremic cardiomyopathy.

Chou-Long Huang, MD PhD, Jian Xie, PhD (UT Southwestern Medical Center), and their colleagues designed a study to investigate whether a decrease in levels of circulating soluble Klotho, a protein that is produced by the kidneys and is known to have anti-aging and heart-protective effects, is a missing link to the cause of uremic cardiomyopathy.

The researchers found that levels of soluble Klotho circulating in the blood are reduced in mice with CKD. Also, mice with a genetic deficiency in soluble Klotho develop much more

severe uremic cardiomyopathy, and replacing soluble Klotho can protect mice against developing uremic cardiomyopathy.

“Our study shows that a decrease in circulating soluble Klotho in CKD is an important cause of uremic cardiomyopathy and opens new avenues for treatment of the disease,” said Dr. Huang.

Study co-authors include Joonho Yoon, PhD; Sung-Wan An, PhD; and Makoto Kuro-o, MD, PhD.

Disclosures: The authors reported no financial disclosures.

The article, entitled “Soluble Klotho Protects against Uremic Cardiomyopathy Independently of Fibroblast Growth Factor 23 and Phosphate,” will appear online at <http://jasn.asnjournals.org/> on December 4, 2014.

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