'Anti-aging' hormone could unlock new treatments for kidney and heart disease

February 13 2017

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A new study by researchers at King's College London has found that patients with diabetes suffering from the early stages of kidney disease have a deficiency of the protective 'anti-ageing' hormone, Klotho.

The study, published today in *Diabetologia* (the journal of the European Association for the Study of Diabetes [EASD]), suggests that Klotho may play a significant role in the development of kidney disease, which is often prevalent in patients with diabetes.

This could mean that Klotho levels have the potential to be used as a risk marker to predict kidney disease, as well as being a target for developing new treatments to prevent kidney disease in patients with type 1 diabetes.

Previous work undertaken at King's has also shown that Klotho protects the vascular system against changes associated with abnormal ageing, such as the thickening of artery walls (atherosclerosis), which characterises age related disorders such as diabetes, heart disease and hypertension.

In this study, scientists tested blood and urine samples from 78 patients with type 1 diabetes of which 33 also showed signs of the early stages of diabetic kidney disease, called microalbuminuria.

They found that patients with microalbuminuria had lower levels of the circulating Klotho hormone, compared with patients without microalbuminuria. Klotho levels in patients without microalbuminuria were similar to levels found in healthy adults.

First author of the study, Dr Giuseppe Maltese, from the Cardiovascular Division at King's College London said: 'For the first time, Klotho has been linked to kidney disease in type 1 diabetes patients and this finding represents an exciting step towards developing new markers for disease and potentially new treatments.'

Senior author, Dr Janaka Karalliedde, said: 'With further research using larger cohorts of patients with type 1 and 2 diabetes we hope to expand

the scope of this work to identify at an early stage patients at high risk of progression of kidney disease and cardiovascular disease.'

Dr Richard Siow, a co-author of the study, recently published research which showed the protective effects of Klotho in cardiovascular cells and said: 'This study highlights the important clinical and basic science research that is being undertaken on Klotho at King's.

'Our research will help scientists to better understand the mechanisms by which this hormone benefits healthy ageing, as well as how deficits in Klotho lead to age related diseases. We are conducting further research on the role of Klotho in ageing and longevity as part of ARK (Ageing Research at King's) research initiatives.'

Limitations of this study include its relatively small and selective sample size and the cross-sectional design, which is unable to identify a causal relationship between Klotho and development of kidney disease.

More information: 'Peturbations of the anti-ageing hormone Klotho in patients with type 1 diabetes and microalbuminuria' *Diabetologia*, 13 February 2017. DOI: 10.1007/s00125-017-4219-1

Provided by King's College London

Citation: 'Anti-aging' hormone could unlock new treatments for kidney and heart disease (2017, February 13) retrieved 3 July 2023 from https://medicalxpress.com/news/2017-02-anti-aging-hormone-treatments-kidney-heart.html

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