Urine test developed to detect heart disease

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(PhysOrg.com) -- Scientists at the University of Glasgow have developed a simple test to detect coronary artery disease by analysing urine samples.

The test looks for particular protein expressions, or biomarkers, associated with the disease and has been shown to have an accuracy rate of almost 90 per cent.

The non-invasive test – called urinary proteome analysis – could not only assist in the diagnosis of coronary artery disease but also in monitoring its progress and the efficacy of treatment.

The research has been published in the latest edition of the Journal of Hypertension.

Professor Harald Mischak, of the Institute of Cardiovascular and Medical Sciences at the University of Glasgow, said: "This test brings us closer to the goal of personalised medicine, where simple analysis of an individual's proteome can help diagnose specific conditions and inform and monitor treatment.

"It may enable us to see dynamic changes in the body on a molecular level, and align treatment individually to the patient's need. Rapid progress of this testing method is expected not only for coronary artery disease, but also for other chronic diseases such as diabetes and its complications, or chronic kidney disease, where similar reports have just recently been published."

Proteomics is a developing branch of medical research which examines the proteins expressed by different genes in the body to identify those that are associated with disease.

By identifying disease-specific biomarkers it is hoped that diagnosis can be made before a disease is symptomatic and in the very early stages of development and targeted therapy applied.

In developing the test, the team of international researchers, analysed 586 urine samples from 408 individuals to identify a pattern of 238 polypeptide proteins which indicated coronary artery disease.

The researchers then recruited 138 individuals – 71 with coronary artery disease and 67 healthy volunteers – and using the pattern of 238 proteins were able to identify those with coronary artery disease with almost 90 per cent accuracy.

Researchers also used the test to see how effective it could be in monitoring short-term and long-term treatment of patients with coronary artery disease and type-2 diabetes and whether the polypeptide pattern itself was affected by drug treatments.

Patients were given a drug called Irbesartan, which is an angiotensin II receptor blocker, for either ten weeks or two years. The results showed that only the long-term group experienced a significant decrease in the disease-specific biomarker pattern.

Prof Mischak said: "This new method may be well suited not only for detection but also for monitoring disease, and assessing the effects of therapy. The biomarker pattern we used is an advancement of already existing and tested biomarkers."

The researchers intend to conduct further clinical studies of this

biomarker approach to [coronary artery disease](#) diagnosis.

Provided by University of Glasgow