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Media Statement

SYMPATHETIC NERVOUS SYSTEM COULD HELP TACKLE DIABETES, HEART DISEASE

West Australian scientists are a step closer to uncovering fresh avenues for tackling obesity, type 2 diabetes and cardiovascular disease after confirming the important role of the sympathetic nervous system in controlling blood sugar levels.

The work reveals the system that controls the body's "fight or flight response" plays a role in regulating sodium glucose co-transporter 2 or SGLT2, the major protein involved in glucose reabsorption.

University of WA School of Biomedical Sciences Assistant Professor Vance Matthews and UWA Winthrop Professor Markus Schlaich, Head of the Dobney Hypertension Centre at the Royal Perth Hospital Campus and the Neurovascular Hypertension & Kidney Disease Lab at Melbourne's Baker Heart & Diabetes Institute, conducted the research, which has been published in the Journal of Hypertension, with funding from Diabetes Research WA.

"This work opens up the potential to control sympathetic nervous system activation to modify the expression of SGLT2 to influence blood glucose levels and therefore treat diet-induced obesity and type 2 diabetes," said Assistant Professor Matthews.

"The study shows that, in animal models, SGLT2 is regulated in kidney cells by noradrenaline, the main neurotransmitter produced by the sympathetic nervous system.

"The activation of the sympathetic nervous system has long been associated with impaired glucose metabolism and this work shows that SGLT2 may be behind the link."

Professor Schlaich said the study may also give rise to new ways of treating cardiovascular disease by helping unravel the mystery of how the glucose-lowering medication empagliflozin – a SGLT2 inhibitor – works.

"Studies have shown this drug reduces the risk of death from cardiovascular disease but we don't yet understand why," said Professor Schlaich.

"In this research, we show for the first time that inhibiting SGLT2 may negatively regulate the sympathetic nervous system giving rise to its protective effects on the heart and kidneys; we now need to test this theory in a human trial."

Diabetes Research WA executive director Sherl Westlund said this research had the power to make an incredible difference in reducing rates of type 2 diabetes.

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"It's estimated that one in three people globally are overweight or obese and that close to that number also have metabolic syndrome putting them at higher risk of developing type 2 diabetes and cardiovascular disease because of elevated blood glucose levels," she said.

"Any new therapies that can bring down these rates would obviously be extremely powerful and have huge health and economic benefits."

Volunteers with obesity, pre-diabetes, or type 2 diabetes are being sought for a Perth trial as part of this work.

To find out more call (08) 9224 0306.

Diabetes Research WA, based at Royal Perth Hospital, was established in 1976 to stimulate research into diabetes in Western Australia and has distributed more than \$5.65 million dollars for this work.

For information, please visit www.diabetesresearchwa.com.au or call (08) 9224 1006.

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