Medical Xpress

Diabetes drug could help reduce cardiovascular disease

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Credit: University of Dundee

The world's most commonly used Type 2 diabetes drug, Metformin, may be 'repurposed' to treat non-diabetic conditions according to researchers from the University of Dundee.

The international study led by Professor Chim Lang and Dr Graham Rena at the Division of Molecular and Clinical Medicine at Dundee suggests that there is now strong evidence that the drug exhibits an anti-

inflammatory action which may prove significant in non-diabetic cardiovascular disease.

Inflammation is understood to contribute to cardiovascular disease (CVD) but existing nonsteroidal anti-inflammatory drugs (NSAIDs) have shown limited utility in CVD treatment.

Metformin, used by hundreds of millions of people with Type 2 diabetes worldwide, has been in use for over 50 years but continues to reveal significant possibilities for treatments other than those for diabetes.

Other recent studies undertaken at the University of Dundee have shown that metformin may help treat Alzheimer's disease and could potentially prevent cancer. The drug is also undergoing new clinical trials to determine if it can promote healthy aging.

This report, however, finds that THE anti-inflammatory effects of metformin are exerted irrespective of diabetes status, meaning further testing is required.

Professor Chim Lang, Deputy Head of Molecular and Clinical Medicine Division at the University, said, "The anti-inflammatory effects of the drug were observed, not only in those with diabetes, but also in a cohort of non-diabetic heart failure patients."

Dr Graham Rena, Senior Lecturer, said, "In this study, we investigated anti-inflammatory effects of metformin, as these may contribute to the CVD benefit of this drug.

"We found that this drug acts differently to NSAIDs, by inhibiting a different target, known as NF-kB. The next steps will be to establish exactly how metformin inhibits NF-kB and to identify specific nondiabetic patient groups that benefit from this anti-inflammatory

action.

"These results suggest that metformin suppresses chronic inflammation by a different mechanism to NSAIDs and provide a non-empirical rationale for further testing of the drug in non-diabetic CVD."

The research, a collaboration with researchers in Paris and Helsinki, is published in *Circulation Research*, one of the leading international journals in cardiovascular medicine, on Friday, 19th August.

The UK arm of the study was funded by the Medical Research Council, Diabetes UK and British Heart Foundation.

Professor Jeremy Pearson, Associate Medical Director at the BHF, said, "These findings offer further evidence that old drugs can perform new tricks. Repurposed medicines can much more quickly benefit patients.

"If this existing and affordable drug can be repurposed as a heart disease treatment, then this is excellent news for the 2.3 million people in the UK living with the condition.

"Research like this is essential to improving how we treat heart disease and preventing the sudden tragedies caused by heart attacks. We look forward to seeing how the research progresses in patient studies."

Dr Emily Burns, Research Communications Manager at Diabetes UK, said, "While inflammation may contribute to the development of cardiovascular disease, current anti-inflammatory drugs (known as NSAIDs) haven't proven to be effective as a treatment so far. It's therefore very interesting to see that metformin may have anti-inflammatory properties that work in a different way to NSAIDs.

"We welcome further research to tell us if metformin could be used to

treat cardiovascular disease, in those with and without Type 2 diabetes, in the future.

"We're very pleased to see that Diabetes UK research is having a real impact, exploring the future potential of a drug that already helps millions of people with Type 2 diabetes."

More information: Amy R. Cameron et al. Anti-Inflammatory Effects of Metformin Irrespective of Diabetes StatusNovelty and Significance, *Circulation Research* (2016). DOI: 10.1161/CIRCRESAHA.116.308445

Provided by University of Dundee