

Scientists uncover potential treatment for painful side effect of diabetes

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(Medical Xpress) -- Why diabetics suffer from increased pain and temperature sensitivity is a step closer to being understood and effectively treated.

Research published in the journal *Nature Medicine* reveals that a multi-national collaboration between scientists from Warwick Medical School in the UK, and universities in Germany, New York, Australia and Eastern Europe, has discovered key information around one of the most distressing side effects of diabetes.

Painful diabetic neuropathy (PDN), which is abnormal and [persistent pain](#) experienced by roughly 50% of patients with diabetes, impairs patients' quality of life and affects sleep, mood, mobility, ability to work, relationships, self-esteem and independence.

Currently there is no clear understanding of how abnormal glucose metabolism produces heightened [pain](#) in diabetics, but this study offers vital new insights. The Warwick team of Dr Naila Rabbani and Professor Paul Thornalley have worked for 30 years on a reactive compound produced excessively from glucose in diabetes called methylglyoxal (MG). The new research led by Professors Angelika Bierhaus, Peter Nawroth and colleagues convincingly shows that MG is a new culprit in pain discomfort and, having pinpointed its relevance, further research is being undertaken to develop ways of inhibiting its activity and therefore reduce pain.

Professor Thornalley from the University of Warwick, explained: “MG appears to attack and modify a key protein in the nerve endings called ‘Nav 1.8’ causing nerves to become super-sensitive to pain and extremes of temperature. So diabetics typically develop a heightened sensitivity to hot and cold, accompanied with intense pain.

“This collaborative research indicates that using small peptides to ‘scavenge’ the problem-causing compound will lead to a reduction in pain and opens up new routes to develop accurate, targeted drug treatments to help diabetics.”

He added that an additional research programme at Warwick is currently investigating ways to increase the amount of an enzyme, glyoxalase 1 (Glo1), which removes MG catalytically.

“With global rates of diabetes increasing each year, our research is offering valuable insight into the science behind why [glucose metabolism](#) causes so many side effects and ultimately how we can develop treatments to improve patient care and outcomes.”

More information: [DOI:10.1038/nm.2750](https://doi.org/10.1038/nm.2750)

Provided by University of Warwick

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