

Nature could provide the answer for blindness caused by diabetes, say experts

April 9 2019



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Mother Nature could have the answer to treating several causes of

blindness, according to a ground-breaking study involving scientists from the University of Surrey and the Eugene and Marilyn Glick Eye Institute at Indiana University School of Medicine in the USA.

The scientists have found and tested compounds from a group of plants that could possibly be used to treat the causes of degenerative eye diseases such as [proliferative diabetic retinopathy](#).

This abnormal growth of new blood vessel cells in the eye is linked to a number of types of blindness, including in premature babies (retinopathy of prematurity), diabetics (proliferative diabetic retinopathy) and [older adults](#) (wet age-related macular degeneration).

In a paper published by the American Chemical Society, the University of Surrey, together with experts from Indiana University in America and Kingston University, detailed their testing of naturally occurring homoisoflavonoids found in the Hyacinthaceae plant family and their synthetic derivatives.

The team tested how well these compounds were able to stop the growth of new blood vessels and isolated several active compounds. One synthetic derivative in particular could be used to develop future treatments. Further work is continuing to synthesize more related compounds.

According to Great Ormond Street Hospital, retinopathy of prematurity affects around 20 per cent of [premature babies](#) and mainly occurs in those who are born before week 32 of pregnancy or weigh less than 1500g.

Diabetic retinopathy is caused by high blood sugar levels damaging the back of the eye—causing blindness if left untreated. It is estimated to affect 28 million people worldwide.

Wet age-related macular degeneration is one of the world's leading causes of blindness—affecting 20 million older adults worldwide.

Professor Dulcie Mulholland, Head of Department of Chemistry at the University of Surrey, said: "It goes without saying that losing your eyesight is a devastating experience. We believe that our results hint at possible future treatments for many degenerative eye conditions and it appears that nature still has many secrets to reveal."

Professor Tim Corson, Director of Basic and Translational Research at the Eugene and Marilyn Glick Eye Institute, added: "Existing therapies for these diseases must be injected into the eye, and do not work in all patients. Our findings are a first step towards therapies that might avoid these shortcomings."

Dr. Sianne Schwikkard, School of Life Sciences, Pharmacy and Chemistry, Kingston University, London (and a former Daphne Jackson Fellow 2014—2016, based at the University of Surrey and sponsored by the Royal Society of Chemistry) said: "The discovery of new and innovative treatments from natural sources for life-altering diseases has huge potential. This work has produced a real opportunity to further collaboration and has the potential to bring new breakthroughs in the treatment of degenerative eye-diseases."

More information: Sianne Schwikkard et al, The Antiangiogenic Activity of Naturally Occurring and Synthetic Homoisoflavonoids from the Hyacinthaceae (sensu APGII), *Journal of Natural Products* (2019). DOI: [10.1021/acs.jnatprod.8b00989](https://doi.org/10.1021/acs.jnatprod.8b00989)

Provided by University of Surrey

Citation: Nature could provide the answer for blindness caused by diabetes, say experts (2019, April 9) retrieved 27 April 2024 from <https://medicalxpress.com/news/2019-04-nature-diabetes-experts.html>

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