

Rapid screening and early diagnosis of diabetic retinopathy

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The prevalence of diabetes is continuously increasing all over the world. The International Diabetes Federation estimated that in 2045 around 700 million people will suffer from diabetes.

Diabetic retinopathy (DR) is one of the most common and serious

microvascular complications of [diabetes](#). Screening and early diagnosis of DR are important for the prevention and treatment of this disease. The lack of effective diagnostic biomarkers for DR leads to unsatisfactory curative treatments.

Recently, researchers led by Prof. XU Guowang from the Dalian Institute of Chemical Physics (DICP) of the Chinese Academy of Sciences and their collaborators found that 12-hydroxy arachidonic acid (12-HETE) and 2-piperidone are suitable for the diagnosis of DR, particularly for the early screening of DR. Their study was published in *Advanced Science* on Oct. 1.

The scientists used multiplatform metabolomics methods to analyze the serum samples from 905 participants, and to provide comprehensive insights into the abnormal metabolic characteristic and disordered [metabolic pathways](#) involved in the onset and development of DR.

Through multivariate/univariate statistical analysis, a novel marker panel consisting of 12-HETE and 2-piperidone was discovered and validated by a two-step strategy. And the panel was able to perform rapid and accurate diagnosis of DR in vitro, showing high diagnostic performance with sensitivity of 80.5—89.4%, specificity of 91.9—93.3%, and area under the receiver operating characteristic curve (AUC) of 0.928—0.946.

Moreover, the marker panel also showed advantages in the early diagnosis of DR, with sensitivity of 81.6—92.9%, specificity of 90.1—93.3%, and AUC of 0.925—0.958.

This study provides a reliable, efficient and convenient new method for the detection of DR with a small amount of serum. It was supported by the National Natural Science Foundation of China, the National Key Research and Development Program of China, and the innovation

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More information: Qiuhui Xuan et al. Multiplatform Metabolomics Reveals Novel Serum Metabolite Biomarkers in Diabetic Retinopathy Subjects, *Advanced Science* (2020). [DOI: 10.1002/advs.202001714](https://doi.org/10.1002/advs.202001714)

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