Informed Consent

Subject Information Page

Study name: Prospective cohort study on the effect of gut microbiota and serum metabolites on glycemic variability and prognosis in patients with diabetic nephropathy

Principal Investigator: Shen Yunfeng

Source: Clinical Research Cultivation Project Fund of the 8th Affiliated Hospital of Sun Yat-sen University (Shenzhen Futian)

Dear participant:

We cordially invite you to participate in a prospective cohort study titled "The Impact of Gut Microbiota and Serum Metabolites on Blood Glucose Variability and Prognosis in Patients with Diabetic Nephropathy". Before joining this study, please carefully read this informed consent form and make a well-informed decision. You may consult your research physician or investigator regarding any unclear points until full comprehension is achieved. Prior to participation, please discuss the study with your family and friends. If you are currently enrolled in other research, please notify your research physician or investigator. The key components of this study are as follows.

1. Research Background:

This prospective cohort study, titled "The Impact of Gut Microbiota and Serum Metabolites on Blood Glucose Variability and Prognosis in Patients with Diabetic Nephropathy," was conducted by the Department of Endocrinology at the Eighth Affiliated Hospital of Sun Yat-sen University (Shenzhen Futian) from July 2025 to July 2029. The study aims to investigate how gut microbiota and serum metabolites affect blood glucose variability and prognosis in diabetic nephropathy patients. To support this research, we will collect your blood and stool samples. The study has been approved by the Medical Research Ethics Committee of the Eighth Affiliated Hospital of Sun Yat-sen University (Shenzhen Futian).

II. **Research Design and Research Process** :

1、 This study is a single-center, observational, prospective cohort study of patients with type 2 diabetes mellitus and chronic kidney disease (CKD) aged 18 to 56 years.

1.1 Study population: patients with type 2 diabetes mellitus and chronic kidney disease (DKD) (n=270)

1) Inclusion criteria:

① Age 18-65 years;

② The diagnosis of DKD meets the relevant criteria in the "China Diabetes Nephropathy Prevention and Treatment Guidelines (2021 Edition)";

③ Type 2 diabetes mellitus, treated with insulin analogues or oral antidiabetic drugs, diagnosed according to the 1999 WHO criteria;

④ no changes in the antidiabetic regimen were made for at least 3 months before study enrollment.

⑤ informed consent was obtained voluntarily.

2) Exclusion criteria:

① The patients with diabetes mellitus complicated with ketoacidosis, primary glomerulonephritis, nephrotic syndrome, lupus nephritis and other primary or secondary kidney diseases.

② The body was in a state of stress such as infection and trauma.

③ women who are pregnant, breastfeeding, or planning to become pregnant next month;

④ severe skin lesions, such as extensive eczema, extensive scarring, extensive tattoos, papular dermatitis, severe edema and psoriasis;

⑤ Sensory surface of the sensor is scarred due to severe skin burns, scalds, sunburns, trauma, ulcers, surgery, etc.

⑥ coagulation dysfunction, anemia or abnormal hematocrit;

⑦ Patients with chronic gastrointestinal diseases or a history of biliary or gastrointestinal surgery were excluded from the study.

⑧ consumed probiotics, prebiotics, or received antibiotic treatment for more than 3 days in the past 3 months; consumed yogurt or yogurt-containing foods or beverages in the past week.

3) Exit criteria:

researcher decided withdrawal

① those who had adverse reactions or serious adverse events or other complications and special physiological changes, and who should be stopped from the study and taken emergency treatment measures such as medication, hospitalization or surgery according to the judgment of the investigator;

② Women became pregnant during the study;

③ Serious violation of the study protocol, such as enrollment in the study without meeting the inclusion criteria.

Subject withdrawal

① provisional withdrawal of informed consent;

② Participants cannot tolerate certain tests;

③ unforeseen events occurred during the study that made it impossible for the participant to continue the study.

2、 If you voluntarily participate in this study, we will require you to complete the following: We need to collect residual blood samples and stool from your routine clinical examinations and treatments. Specific tests include complete blood count, liver function, kidney function, glycated hemoglobin, blood lipids, fasting insulin levels, thyroid function, coagulation function, and gut microbiota. The use of these specimens will not affect your normal diagnosis and treatment. Additionally, we will collect your demographic information through face-to-face interviews and electronic medical record systems, including age, gender, and education level. Personal history: smoking and alcohol consumption history; disease history: presence of comorbidities such as hypertension; medication history: antidiabetic drugs, antihypertensive drugs, etc.; gastrointestinal status, dietary habits; physical examination: general condition, height, weight, blood pressure (BP) including systolic (SBP) and diastolic (DBP), waist circumference (WC), hip circumference (HC), waist-to-hip ratio (WHR). Furthermore, you will need to wear a continuous glucose monitor (CGM) for 14 days within 24 hours of hospital admission to monitor blood glucose levels. We will collect your CGM reports for these 14 days. After discharge, we will collect information on chronic kidney disease progression, cardiovascular events, and adverse outcomes through outpatient or telephone follow-ups at 1 year, 2 years, and 3 years.

3、 Upon completing sample collection, we will establish a dedicated blood and stool sample database containing "sample identifiers" and "participants' pinyin initials". Sample tube labels will display both identifiers to create a "dual verification system" for participant information and sample numbers, ensuring data accuracy during analysis. **Personal identification data will be anonymized during collection** to protect participant privacy. After enrollment, patients and controls will receive unique project identifiers. All personal data and case records will be digitized and stored by designated personnel, with only individual identifiers visible to users—names and other sensitive information will not be accessed. Upon study completion, all samples will be securely disposed of in accordance with regulatory protocols.

4、 Confidentiality Measures for Personal Information: Your sample data will be stored electronically in a dedicated computer, which is password-protected and reserved exclusively for one designated sample manager. The refrigeration unit for sample storage is a specialized biological sample freezer, with the key kept by the designated sample manager. Your medical records will be stored at the hospital and accessible only to researchers. When necessary, the results of this study may be published in medical journals with your and other participants' understanding and cooperation, but we will maintain strict confidentiality of your research records as required by law. Participants' personal information will be strictly protected, unless

Page for Signing the Informed Consent Form

Informed consent statement:

I was informed of the purpose, background, process, risks, and benefits of the study, and I had sufficient time and opportunity to ask questions, which I was satisfied with.

I was also told who to contact when I had questions, wanted to report difficulties, concerns, suggestions for the study, or wanted further information or help with the study.

I have read the informed consent form and agree to participate in this study.

I understand that I may opt out of this study or withdraw from it at any time during the study without any reason.

I will receive a copy of the informed consent form, which includes my signature and that of the investigator.

Subject signature:_____ Signature date:_____

Subject phone number:_____

Signature of the legal representative Signature date (if necessary): （P. r. n）

telephone：_____

Witness Signature Signature date (if necessary):_____（P. r. n）

telephone：_____

The informed consent form was read and explained to the participant, and all questions raised by the participant were answered.

Researcher's signature:_____ Signature date:_____

Researchers' phone numbers:_____