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TITLE

Comparison of the clinical manifestations of type 2 diabetes mellitus between rhesus monkey (*M. m. Lasiotis*) and human being

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Aim: By changing the dietary habit for 24 months, compare the clinical parameters of rhesus monkeys (*M. m. lasiotis*) with those of human beings at different diabetes stages including impaired glucose tolerance (IGT), impaired fasting glucose (IFG), and type 2 diabetes mellitus (T2DM), and establish classification and diagnosis criteria for rhesus monkeys (*M. m. lasiotis*).

Methods: Sixty male monkeys whose fasting plasma glucose (FPG) $\leq 5\text{mmol/l}$ were enrolled in this study. Fifty monkeys aged 7-20 years were fed with high-fat diet and 10 aged 4-10 years fed with standard diet. Body weight, body mass index (BMI), FPG, FPI, and glycosylated hemoglobin (HbA1c) level were measured and calculated. IGT and the sensitivity of postprandial insulin secretion were analyzed by intravenous glucose tolerance test (IVGTT). WHO 2006 human diabetes diagnosis criteria was adopted to analyze the data.

Results: Of 50 monkeys fed with high-fat diet, 8 developed T2DM, 26 experienced IGT or IFG. FPG of 10 monkeys fed with normal diet was normal. All monkeys with IGT or at the early stage of T2DM experienced obesity, compensatory increase of FPI, remarkably decline of postprandial glucose clearance rate (KGluc5-20), decreased first-phase insulin secretion, and retarded second-phase insulin secretion. Meanwhile, HbA1c increased along with the increase of blood glucose level.

Conclusion: Rhesus monkey (*M. m. lasiotis*) has many similarities with human beings in the terms of clinical manifestations and risk factors at different diabetes stages. Therefore, Rhesus monkey (*M. m. lasiotis*) can be a good animal model for research on T2DM.

Biography

Zeng Wen has completed her Ph.D from Sichuan Agricultural University. She is the director of Center for safety evaluation and research of Sinopharm and the vice director of National resource center of laboratory rhesus monkeys. She has published more than 10 papers in reputed journals and serving as an expert of new drug review of China SFDA.