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Shaodong Guo

Texas A&M University, USA

Phytochemicals and Dietary Intervention in control of Diabetes, Obesity and CVD

The growing prevalence of metabolic syndrome (MetS) in the US and even worldwide is becoming a serious health problem and economic burden. MetS has become a crucial risk factor for the development of Type 2 Diabetes Mellitus (T2D) and Cardiovascular Diseases (CVD). In this seminar, we discuss mechanisms of MetS pathogenesis and phytochemical role from tea in control of glucose homeostasis focusing on the Forkhead/winged helix transcription factor O-class member 1 (FoxO1), a key mediator of insulin and glucagon signaling in control of glucose homeostasis. One of the most potent phytochemicals from tea is *epigallocatechin gallate (EGCG)* that has been attracted interests owing to its potential to combat hyperglycemic diabetes, but molecular mechanisms underlying its antihyperglycemic effect, in particular the effect on FoxO1 is poorly understand. This study aims to assess the impact of EGCG on the glucagon signaling pathway in regulating glucose metabolism. A novel mechanism of EGCG in restraining Hepatic Glucose Production (HGP) is through antagonizing glucagon signaling and Foxo1. EGCG may serve as a promising compound for regulating glucose homeostasis and benefit to CVD.

Speaker Biography

Shaodong Guo is Associate Professor in the Department of Nutrition and Food Science at Texas A&M University College. He received his Ph.D in Physiology from Peking University, China. Then he completed his postdoctoral research training in Genetics, Biochemistry, and Medicine in the Chinese Academy of Sciences, the University of Illinois at Chicago, and Harvard University, respectively. He was Instructor in Medicine at Children's Hospital Boston and Harvard Medical School for two years prior to joining the faculty at Texas A&M Health Science Center. Currently, He serves as senior editor for the Journal of Endocrinology and Journal of Molecular Endocrinology, two major official journals of Endocrine Society of Europe, UK, and Australia, and he is the textbook chapter writer for Metabolic Syndrome edited by Rexford Ahima and published by Springer in 2016. His lab research focuses on insulin/glucagon and estrogen signal transduction, insulin resistance, gene transcriptional control of nutrient homeostasis, and cardiac dysfunction in diabetes. He has been working on the gene transcriptional regulation of metabolic homeostasis by insulin receptor substrate proteins (IRS) and Forkhead FoxO transcription factors and he has been funded by American Diabetes Association (ADA), American Heart Association, and the National Institute of Health of USA. He is a recipient of ADA junior faculty award, career development award, and Richard R Lee Research Excellence Award. His work has been published in a number of journals including the JBC, Endocrinology, Hypertension, Diabetes, Circulation Research, AJP, MCB, and Nature Medicine, receiving more than 5,500 citations from the Google Scholar.

e: Shaodong.guo@tamu.edu

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