

12TH GLOBAL NEPHROLOGISTS ANNUAL MEETING

June 26-28, 2017 London, UK

Metal metalloproteinase 2 is differentially regulated by the interplay between glucose and insulin

Ming-Yuh Shiau¹, Yi-Ching Hwang² and Yih-Hsin Chang²

¹Hungkuang University, Taiwan

²National Yang-Ming University, Taiwan

Enhanced production of collagen, mediated by matrix metalloproteinases (MMPs), is a key event in the development of diabetic glomerular extracellular matrix (ECM) abnormalities. The MMP-mediated ECM alterations are also required for the processes of adipose tissue expansion which requires the differentiation and transformation of pre-adipocytes into mature adipocytes. Nevertheless, the pre-adipocytes behaviors, and their possible roles in energy homeostasis have long been overlooked. The present study aimed at examining the cross talk among glucose, insulin and interleukin-4 (IL-4) on regulating MMP-2 expression and activity in 3T3-L1 pre-adipocytes. Our results revealed that glucose level is a pre-requisite for pre-adipocytes responding to insulin and/or IL-4 treatment. In high glucose-containing environment, short-term acute insulin treatment (AI) and long-term chronic insulin exposure (CI) showed opposite regulation to MMP-2 expression and activity. Interestingly, the dominant MMP-2 regulatory role of CI under euglycemic condition was attenuated in cells exposed to high glucose concentration. It indicates that chronic insulin exposure has dominant effects on modulating MMP-2 and possibly the ECM remodeling under hyperglycemic state. This finding raises the possibility that continuous insulin injection, required for patients suffering from T1DM and T2DM with long duration, is likely to potentiate the onset of diabetic complications by causing ECM remodeling through MMP-2 alterations once their insulin treatment is not properly monitored. The present study uncovers novel observations regarding pre-adipocytes behaviors and suggests their roles in the process of increased adiposity and diabetic complications.

Biography

Ming-Yuh Shiau has completed his PhD from Chung Shan Medical University. He is an Associate Professor and Chairman of Division of Basic Medical Sciences at Department of Nursing, College of Medicine & Nursing, Hungkuang University, Taiwan. He has published more than 34 papers in reputed journals and has been serving as an Editorial Board Member of *Case Reports in Immunology*.

ming@sunrise.hk.edu.tw

Notes: