

2014 12th Annual Meeting of the *Society for Heart and Vascular Metabolism* meeting is "Strategies for recovering metabolic homeostasis and ventricular function in the diseased heart".in Northern Norway.

6月24-27日

The anti-apoptotic effects of DATS through inhibiting HIF-1 α and IGFBP-3 expressions on high glucose-treated H9c2 cardiomyoblast cells

Y.-M. Wei¹, C.-Y. Huang^{2,3}, W.-W. Kuo¹

¹Dept of Biological Science and Technology, China Medical Univ., Taichung

²Graduate Institute of Basic Medical Science, China Medical Univ., Taichung

³Dept of Biological technology, Asia Univ., Taichung

Backgrounds:

Diabetes is one of the most common diseases to lead death in Taiwan and more than 80% patients are dead due to cardiovascular diseases. In our previous study, it is demonstrated that cardiac activation of HIF-1 α -IGFBP-3 signaling mediated by ROS-regulated PHD is involved in HG-induced apoptosis. Diallyl trisulfide (DATS) is the component in garlic oil with the strongest inhibitory effect on DCM. In this study, we will further investigate whether HIF-1 α -IGFBP-3 signaling governs the anti-apoptotic effect of DATS on HG-exposed H9c2 cardiomyoblast cells.

Methods and Results:

H9c2 cells were treated with 5.5 mM and 33mM glucose for 36 hr. It was observed that significant increased levels of the cell apoptosis, ROS production, HIF-1 α , IGFBP-3 and down-regulated phosphorylated Akt phosphorylation induced by HG were reversed by the treatment of DATS in a dose-dependent manner. The results of co-immunoprecipitation (Co-IP) assay showed that DATS suppressed the extracellular association of IGF-1 with IGFBP-3 of H9c2 cardiomyoblast exposed to HG. The treatment of H₂O₂ and PHD siRNA increased HIF-1 α and IGFBP-3 protein levels which was decreased by DATS. Medium sample showed the similar results. The overexpression HIF-1 α and IGFBP-3 reversed the level of cell apoptosis which was suppressed by the treatment of DATS in HG-exposed cells.

Conclusion:

Taken together, these findings show that the mediation of ROS-regulated PHD on HIF-1 α -IGFBP-3 signaling activation governs the anti-apoptotic effect of DATS on HG-exposed H9c2 cardiomyoblast cells.