# IGF-1 reduce protein O-GlcNAcylation via AMPK activation in H9C2 cardiomyoblast cultured in high glucose media

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Background: Diabetes is a disease characterized by the increase in the serum glucose concentration. Therefore, this glucose excess shunts into the hexosamine biosynthetic pathway producing UDP-GlcNAc, which can be transfer to serine residues and modify the activity of different proteins, including contractile proteins in cardiomyocytes, decreasing their function. Here we show the effect of IGF-1 treatment on this posttranslational modification.

Methods: H9c2 cell line were cultured in DMEM media, 10% FBS, at 80% of confluence. Cells were incubated in high-glucose (30 mM) in the presence or absence of 10 µmol/L of IGF-1 (HG and HG+IGF-1). As control groups, we used cells incubated in DMEM with normal glucose (5 mM) in presence or absence of IGF-1 (NG and NG+IGF-1). Compound C (10 µM for 24 h) was used as AMPK inhibitor. After 48 h of incubation proteins were extracted for Western Blot analysis.

Results: The effect of IGF-1 on the cells seed with HG media shows a reduction in the O-GlcNAc modification (LG vs HG vs HG+IGF-1; 100±12.5 vs 189±20 vs 132±12). IGF-1 effect on reducing O-GlcNac levels was blocked by Compound C (NG vs HG vs HG+IGF-1; vs 110±7 vs 131±8 vs 132±13). Also, we studied the expression of the two main proteins implicated in this PTM, OGT and OGA, showing no significant differences in protein expression between groups.

Conclusion: IGF-1 can be use as potential treatment to restore normal O-GlcNAcylation in diabetic cardiomyopathy.