Effect of visfatin on gene expression of insulin signaling molecules in SW872 Adipocytes

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Objectives:

To evaluate the effects of visfatin on the mRNA expressions of the Insulin Signal Molecules including insulin receptor substrate–1 (IRS-1), insulin receptor substrate-2 (IRS-2) and phosphatidylinositol 3-kinase(PI3K) on the states of insulin resistant in SW872 Adipocytes. We hypotheses that visfatin may promote the glucose transport and play a physiological role in the insulin resistance in SW872 adipocytes by modulating the signaling molecules of IRS-1， IRS-2 and PI3K.

Methods:

Preadipocytes of the line SW872 were cultured and induced to differentiate to be mature SW872 adipocytes. Then the cells were treated with oleate at concentration of 1.0 mmol/L for 24h to induce insulin resistance. And the cells were cultured with visfatin at concentration of 100nmol/L for 1h, then the mRNA was extracted. RT-PCR method was used to detect the mRNA levels of IRS-1, IRS-2 and PI3K.

Results:

The mRNA expression levels of IRS-1, IRS-2 and PI3K in SW872 Adipocytes were significantly increased stimulated by 100nmol/L visfatin. Compared with control group, the mRNA levels of IRS-1, IRS-2 and PI3K were increased respectly by 36.54%（P <0.01)、12.81%(P <0.05) and 55.69% (P <0.01). In the insulin resistant states, after the stimulating of visfatin, the mRNA expression levels of IRS-1, IRS-2 and PI3K were increased by 26.98%(P <0.05）、35.59%（P <0.05）、27.61%（P <0.01）. In the insulin resistant states, compared with the control group (0ng/ml visfatin group), the mRNA expression levels of IRS-1, IRS-2 and PI3K were decreased by 16.52%（P <0.05）、37.60%（P <0.05）、31.68%（P <0.01）； moreover their mRNA levels were decreased by 18.22%（P <0.01）、22.16%（P <0.05）、33.47%（P <0.01）after the stimulating of visfatin.

Conclusions:

Taken together these data suggest that visfatin may promote the glucose transport and play a physiological role in the insulin resistance in SW872 adipocytes by modulating the signaling molecules of IRS-1， IRS-2 and PI3K.

Key Words:

Visfatin; Signal molecules; SW872 adipocytes; insulin resistance

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