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Opinion Article

Modified Dachaihu Decoction Regulates FOXO3a Acetylation Activated Autophagy and Relieving Insulin Resistance in Obesity

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Abstract

Background

The previous studies of our research group indicate that the weakening of mitochondrial autophagy function is the key mechanism of obesity-induced insulin resistance, and Mitochondrial autophagy mediated by PINK1/Parkin pathway can reverse mitochondrial dysfunction. Recently, we found that FOXO3a, as an upstream regulator of PINK1, has been found to play a key role in regulating mitochondrial autophagy.However,FOXO3a is regulated by deacetylation.

Objective

To explore whether Modified Dachaihu Decoction can regulate liver mitochondrial autophagy mediated by the PINK1/Parkin signal pathway by regulating the expression of FOXO3a acetylation.

Methods

Establish cell models. They were divided into three groups (blank control group, model control group, and Modified Dachaihu Decoction group). The supernatant was extracted and determined by a biochemical method; The insulin sensitivity of each group was evaluated by a 3H-D-glucose incorporation test; MDA and TNFα、IL-6 in the supernatant were detected by ELISA level; The level of SOD was detected by spectrophotometry.The expression of mitochondrial autophagy-related proteins and the expression of FOXO3a and ace-FOXO3a were measured by Western blot.

Results

Compared with the model control group, the Modified Dachaihu Decoction group increased insulin sensitivity, and The levels of TNF- α、IL-6, and MDA decreased, while the activity of SOD increased ($P < 0.05$). Western blot showed that compared with the model control group, the expression of mitochondrial autophagy-related proteins and FOXO3a in the Modified Dachaihu Decoction group increased, and the expression of ace-FOXO3a decreased ($P < 0.05$).

Conclusions

We speculate that in this experiment, Modified Dachaihu Decoction may regulate mitochondrial autophagy mediated by PINK1/ Parkin signal pathway by downregulating the expression of FOXO3a acetylation, to reduce Hepatic Insulin Resistance in Obesity.

Keywords: *FOXO3a Acetylation, Autophagy, Hepatic Insulin Resistance*

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