

## NT-PGC1- $\alpha$ promotes hepatic lipid metabolism without increasing gluconeogenesis

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PGC-1 $\alpha$  (PPAR $\gamma$ coactivator 1 $\alpha$ ) can promote the transcription of related target genes by interaction with many nuclear receptors. In muscle cells and adipocytes, PGC-1 $\alpha$  functions as glucose and fat metabolism promotor. NT-PGC1- $\alpha$ , an isomer of PGC-1 $\alpha$  is reported by Zhang for the first time in 2009. Since it lacks the structural domain to interact with FOXO1, which facilitates gluconeogenesis, we came up with a new assumption which is that NT-PGC-1 $\alpha$  can enhance fatty acid oxidation in liver, yet has no influence on hepatic gluconeogenesis. By the overexpression of NT-PGC-1 $\alpha$  in hepatic cell system HepG2 and L02, it was proved that NT-PGC-1 $\alpha$  cannot promote the expression of PEPCK (phosphoenolpyruvate carboxykinase, a key enzyme in gluconeogenesis process) and the hepatic production of glucose, but sharply induced the expression of CPT1A (carnitine palmitoyltransferase 1A, a key enzyme in fatty acid oxidation). Mouse primary hepatocytes induced by palmitate or FGF21 showed notably increased expression of NT-PGC-1 $\alpha$ . We then treated mice models of alcoholic fatty liver with resveratrol, and the expression of NT-PGC-1 $\alpha$  increased remarkably. This showed that NT-PGC-1 $\alpha$  is involved in the process of resveratrol regulating hepatic fatty acid metabolism and proved that NT-PGC-1 $\alpha$  participate in hepatic fatty acid metabolism in animals. In this case, the relation between NT-PGC-1 $\alpha$  and hepatic fatty acid metabolism is discussed in cells and in animals, and has proved that NT-PGC-1 $\alpha$  can enhance fatty acid oxidation in liver, yet has no influence on hepatic gluconeogenesis. According to these findings, NT-PGC-1 $\alpha$  could be a new target in obesity or type 2 diabetic treatment.

### Biography

Qiang Xiao-Yan received her bachelor's degree in Bioengineering at China Pharmaceutical University in 2010. With 2-years school-enterprise training, she finished her master's degree in advance in 2012. She is currently working as a Ph.D. student in Biochemical Pharmacy at China Pharmaceutical University. To date, she has published several papers in state core journals in China.

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