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**Electroacupuncture prevents white adipose tissue inflammation through modulation of hypoxia-inducible factors 1 $\alpha$ -dependent pathway in obese animals**

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An important initiator of the inflammatory response to obesity is adipose tissue, which is involved in obesity induced insulin resistance and chronic inflammation. Electroacupuncture (EA) shows anti-inflammation and several pleiotropic effects that interact with metabolic pathways. Numerous studies have demonstrated the clinical efficacy of acupuncture in weight loss. However, the precise mechanism of its potential effect related to adipose tissue remains poorly understood. Obese animals treated with EA showed significantly reduced body weight. EA decreased the number of F4/80 and CD11b positive macrophages in epididymal adipose tissue. We found that EA at Zusanli (ST36) acupoints significantly alleviated macrophage recruitment and then improved the obesity associated factors of sterol regulatory element binding protein (SREBP)-1 and target genes expression in obese animals. Adipose tissue tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), interleukin-1 (IL-6), monocyte chemoattractant protein-1 (MCP-1) and CD68 mRNA expression were significantly reduced by EA treatment in obese animals. On the other hand, EA significantly down-regulated HIF-1 $\alpha$  level in a time course dependent manner in *ob/ob* mice. The expression level of hypoxia related genes (VEGFA, Slc2a1, GPX1) and inflammation related genes (TNF- $\alpha$ , IL-6, MCP-1) were also poorly expressed in adipose tissue after EA treatment. This phenomenon was paralleled by the levels of inflammatory cytokines, such as TNF- $\alpha$ , IL-6 and IL-1 $\beta$  in obese mice. We conclude that EA offers a beneficial effect on adipose tissue mass in obese animals, at least partly, via attenuation of lipogenesis signaling, thus resulting in improved inflammatory response. Therefore, EA prevents weight gain through modulation of HIF-1 $\alpha$ -dependent pathways and inflammatory response in obese adipose tissues.

**Biography**

Tzung-Yan Lee has completed his PhD degree from National Yang-Ming University and Postdoctoral studies from Institute of Biological Chemistry, Academia Sinica. He has published more than 50 papers in reputed journals and has been serving as an Editorial Board Member of reputed.

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