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Study the improvement of *Andrographispaniculata* in insulin resistanceHaw-Wen Chen and Hui-Chun Chen  
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Pathogenesis of insulin resistance has been linked to obesity-induced chronic low grade inflammation. In this study, we investigated the effects of andrographolide (AND), 14-deoxy-11,12-didehydro-andrographolide (deAND), and ethanolic extract of *Andrographispaniculata* (APE) on improvement of insulin sensitivity induced by TNF- $\alpha$  mature 3T3-L1 adipocytes and in high-fat diet (HFD)-fed C57BL/6J mice and characterize their working mechanisms. In mature 3T3-L1 adipocytes, we found that APE and deAND reversed the TNF- $\alpha$ -induced suppression of insulin-stimulated 2-NBDG uptake. APE and deAND increased protein level of glucose transporter 4 (GLUT4) in cell membrane fraction by phosphorylating IRS-1<sup>tyr632</sup> and AKT<sup>ser473</sup> in TNF- $\alpha$ -treated 3T3-L1 adipocytes. In addition, AND, deAND, and APE inhibited TNF- $\alpha$ -induced inflammatory response by blocking p38 phosphorylation and NF- $\kappa$ B p65 nuclear translocation. *In vivo*, we examined chow diet or HFD with or without 0.1% AND, 0.05% deAND, or 0.4% APE intervention for 16 weeks on insulin resistance. Dietary deAND and APE reduced HFD-induced body weight gain and improved glucose intolerance and insulin sensitivity. AND, deAND and APE attenuated the levels of MCP-1 and GPT in the serum of HFD-fed mice. Meanwhile, dietary AND, deAND, and APE enhanced the expression of GLUT4 in cell membrane fraction via phosphorylation of IRS-1<sup>tyr632</sup> and AKT<sup>ser473</sup> in epididymal adipose tissue of HFD-fed mice. These results suggest that *A. paniculata* possesses potential to fight against obesity-induced insulin resistance and inflammation.

## Biography

Haw-Wen Chen has completed her PhD from the Department of Food Science and Human Nutrition of Iowa State University, USA. She is currently a Professor of the Department of Nutrition of China Medical University in Taiwan. She has published more than 80 papers in reputed journals.

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