

8th International Conference and Exhibition on

TRADITIONAL & ALTERNATIVE MEDICINE

November 08-09, 2018 Auckland, New Zealand

Gynura divaricata rich in 3,5-/4,5-dicaffeoylquinic acid and chlorogenic acid restrains islet cell apoptosis and improves pancreatic function in type-2 diabetic mice

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The aim of this study was to investigate the potential protective effect of *Gynura divaricata* (GD) in diabetic mice. *Gynura divaricata* (GD) is a kind of natural products for edible and medicine. The analytical results showed that the methanol extract of GD riches in 10.3% 3,5- or 6.8% 4,5-dicaffeoylquinic acid and 5.6% chlorogenic acid by high-performance liquid chromatography with diode array detection (HPLC-DAD). After STZ-induced type-2 diabetic mice (male ICR) were orally administered with 1%, 5% and 10% GD diet for four weeks, a series of assays was performed. The hypoglycaemic rate of fasting blood glucose (FBG) reached 41.4% in 10% GD group and the fasting serum insulin in the highest dose GD group has decreased as low as normal group. GD treatment significantly reduced the Glycosylated Serum Protein (GSP) level in diabetic mice. The activities of total Superoxide Dismutase (SOD) and glutathione peroxidase were markedly increased; while the Malonaldehyde (MDA) level was decreased in pancreas tissue by treatment of GD. H&E-staining showed that the pathological damage in islets with pancreatic β -cells was ameliorated by GD treatment. An immunohistochemical assay showed that GD promoted marked β -cell regeneration. GD treatment also caused notable increase in GLUT2, GK, MafA, PDX-1 and Bcl-2 as well as reduction in Bax and caspase-3 expression as shown by western blot analysis. In conclusion, GD exerts the pronounced hypoglycemic effect by restraining islet cell apoptosis and improving pancreatic function. Therefore, GD might be a promising food or medicine for the treatment of diabetes.

Biography

Xiao-Lu Yin is pursuing Master's degree in Biology from Soochow University. She has published one paper "Mulberry branch bark powder significantly improves hyperglycemia and regulates insulin secretion in type II diabetic mice".

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