Traditional chinese medicine in treatment of metabolic syndrome.

In management of metabolic syndrome, the traditional Chinese medicine (TCM) is an excellent representative in alternative and complementary medicines with a complete theory system and substantial herb remedies. In this article, basic principle of TCM is introduced and 25 traditional Chinese herbs are reviewed for their potential activities in the treatment of metabolic syndrome. Three herbs, ginseng, rhizoma coptidis (berberine, the major active compound) and bitter melon, were discussed in detail on their therapeutic potentials. Ginseng extracts made from root, rootlet, berry and leaf of Panax quinquefolium (American ginseng) and Panax ginseng (Asian ginseng), are proved for anti-hyperglycemia, insulin sensitization, islet protection, anti-obesity and anti-oxidation in many model systems. Energy expenditure is enhanced by ginseng through thermogenesis. Ginseng-specific saponins (ginsenosides) are considered as the major bioactive compounds for the metabolic activities of ginseng. Berberine from rhizoma coptidis is an oral hypoglycemic agent. It also has anti-obesity and anti-dyslipidemia activities. The action mechanism is related to inhibition of mitochondrial function, stimulation of glycolysis, activation of AMPK pathway, suppression of adipogenesis and induction of low-density lipoprotein (LDL) receptor expression. Bitter melon or bitter gourd (Momordica charantia) is able to reduce blood glucose and lipids in both normal and diabetic animals. It may also protect beta cells, enhance insulin sensitivity and reduce oxidative stress. Although evidence from animals and humans supports the therapeutic activities of ginseng, berberine and bitter melon, multi-center large-scale clinical trials have not been conducted to evaluate the efficacy and safety of these herbal medicines.