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A new hypolipidemic drug from the traditional medicine of China

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According to the world health organization, China surpassed the United States as has the largest population of obese in the world in 2015. In China, the overall prevalence of adult dyslipidemia is as high as 40.40%, about 160 million patients. Dyslipidemia is an important risk factor for Atherosclerotic Cardiovascular Disease (ASCVD). In recent years, the purpose of the treatment of blood lipids in the world is to prevent and control ASCVD and reduce cardiovascular events such as myocardial infarction, stroke or death from coronary heart disease. Over the past 20 years, several large-scale clinical trial results consistently show that statin can significantly reduce the cardiovascular event risk in the primary and secondary prevention of ASCVD. To achieve the ideal blood lipid, statin was the first choice in clinic. Increasing evidences shows that high-intensity statin therapy is associated with higher risk of myopathy and liver enzymes, which is more prominent in the Chinese population. HPS2-THRIVE studies showed that the incidence of hepatic adverse reactions in Chinese patients was significantly higher than that in European patients when using moderate-intensity statin therapy. At present, there is no safety data on the high intensity statin treatment of Chinese population. To solve the present situation of dyslipidemia in China, we researched and developed the Daming capsule (patent number: ISSN1008-4274, the national drug approval number: Z20030085). Daming capsule is composed of six traditional Chinese herb containing rhubarb, Semen cassiae, Salvia miltiorrhiza, Ginseng, tangerine peel, and poria. It is used to treat hyperlipidemia in clinic. Six randomized multicenter clinical trials have verified that Daming capsule can significantly reduce serum TC and LDL-c contents in patients with hyperlipemia. In addition, Daming capsule also has the effect of lowering blood glucose and protecting the heart function of diabetic rats. The pharmacological action of Daming capsule may be related to the up-regulation of GLP-1 protein and beta-catenin, as well as the elevation of Cav1.2, Kv4.2 and connextin 43. To specify the bioactive components of Daming capsule, we first developed a high-throughput, high-resolution, and high-sensitivity ultra-high-performance liquid chromatography with electrospray ionization quadrupole time-of-flight tandem mass spectrometry method. The established strategy based on ultra-high-performance liquid chromatography with electrospray ionization quadrupole time-of-flight tandem mass spectrometry was successfully applied to screen the bioactive components of Daming capsule. Up to 53 absorbed compounds were identified. Six anthraquinones with fast and high absorption, namely, emodin-O-glucoside, aurantio-obtusin, aloe-emodin, rhein, emodin and chrysophanol, were screened as potentially bioactive components of Daming capsule. At present, we are working on the selection and optimization of these bioactive components and we have made a new safe and effective hypolipidemic derivative. We hope that the discovery of this drug can solve high prevalence of dyslipidemia in China.

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