

Pharmacological and Physiological Activities of Danshen Extracts

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Abstract

Danshen *Salvia miltiorrhiza* Bunge, a traditional herb medicine of multi-function, is commonly used in Eastern Asia. Oral administration of water decoction of Danshen dried root has a variety of health benefits for removing blood stasis, relieving pain, promoting blood circulation, emmenagogue, and anti-depression. The main components of Danshen can be classified into water-soluble phenolic acids represented by salvianolic acid B and lipophilic diterpenoid quinones with the main ingredient tanshinone IIA. Pre-clinical studies have revealed that water-soluble extracts of Danshen have multiple protective effects on the cardiovascular, brain, liver and other organs; the lipophilic extracts are useful to maintain heart health and have anti-cancer, anti-bacterial and anti-inflammatory activities. The former has been developed as herb medicaments, while the latter have the problem of poor oral bioavailability owing to low water-solubility, easy efflux by the P glycoprotein, and glucuronidative metabolism among others. So far it is difficult to develop the lipophilic extracts as health food or clinical medication. A synthesized compound modified from tanshinone IIA, sodium tanshinone IIA sulfonate has been developed for cardiovascular disease treatment, however, its anti-cancer activity declines. In this review the pharmacological and physiological studies of Danshen extracts were described, moreover, the possible way of improving the oral bioavailability by means of mixing selective medical plants was suggested.

Key words: Danshen, pharmacological and physiological activities, pharmacokinetics