

Improving abnormal hemorheological parameters in aging guinea pigs by water-soluble extracts of *Salvia miltiorrhiza* Bunge.

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Abstract

Salvia miltiorrhiza Bunge, known as Danshen in Chinese traditional medicine is effective at promoting blood circulation and removing (or decreasing) blood stasis. In the present study, we selected aging, 24-month-old guinea pigs as the animal experimental models and fed them a diet containing 75, 100 or 150 mg/(kg day) of water-soluble extract components of *Salvia miltiorrhiza* Bunge (WSm) for 28 days, respectively, in order to evaluate the effects of WSm on their abnormal hemorheological parameters. The results showed that the blood biochemical parameters of the aging guinea pigs remained unaffected by orally given WSm compared to the controls, except that the fibrinogen levels of the group fed the high dose of WSm (150 mg/(kg day)) decreased. Aging guinea pigs fed a low dose of WSm (75 mg/(kg day)) showed no significant difference in hemorheological parameters. However, feeding of WSm at 100 mg/(kg day) (medium dose), significantly reduced erythrocyte membrane MDA levels, which probably increased erythrocyte deformability and decreased erythrocyte flow resistance, though no improvement in erythrocyte aggregation, blood viscosity, and blood viscoelasticity could be observed. Furthermore, when the dose reached 150 mg/(kg day) of WSm (high dose), a significant decrease in whole blood viscosity was observed at high, medium and low shear rates. Blood viscosity and viscoelasticity exhibited significant improvement in oscillatory measurements. Also, we found that the oxygen transport efficiency of whole blood increased.