

Salvia Miltiorrhiza Alleviates High Salt Diet-induced Hypertension by Regulating the Th17/Treg Axis Balance and Altering the Gut Microbiota

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Abstract

High salt Diet (HSD) can participate in the mechanism of hypertension by inducing differentiation of T helper cell 17(Th17) and adjusting intestinal microecological structure. Salvia miltiorrhiza (SM) is a traditional Chinese medicine utilized for treating hypertension for thousands of years. Our investigation seeks to evaluate the effect of SM on HSD induced hypertension by the Th immune response and gut microecology approaches. The levels of blood pressure, serum inflammatory factors, intestinal inflammatory factors, Th17 cells, Regulatory cells (Treg) and gut microbiota were determined, respectively, to achieve this aim. Our results showed that SM restored blood pressure level of hypertension rat to those observed in healthy controls. Meanwhile, this medicine obviously improved the Th17/Treg axis balance, with the levels of IL-6, IL-17 and IL-1 β decreased and the levels of IL-10 increased. Regarding the gut microbiota, SM treatment improved their abundance and diversity, as well as decreased the ratio of Firmicutes to Bacteroidetes (F/B). Especially, this medicine apparently increased the level of the beneficial bacteria of *Prevotella*. Further correlation analysis showed that there was a significant positive correlation between *Prevotella* and the improvement of Th17/Treg axis. In conclusion, our results demonstrated that SM can effectively reduce the blood pressure level caused by HSD, which may be related to the functions of adjusting gut microbiota and improving Th17/Treg axis balance. This study is of great significance for the effective use of SM in the treatment of HSD induced hypertension.

Keywords

High Salt Diet, Hypertension, Salvia Miltiorrhiza, Gut Microbiota, Th17/Treg Axis