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Identification of components from Sinapis semina that act on the thoracic aorta by screening using cell membrane chromatography combined with online-high performance liquid chromatography-mass spectrum

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Sinapis semina (JieZi in Chinese), which is the dried seed of *Sinapis alba* L. (Brassicaceae), has been reported for having antihypertensive efficacy. However, the active components have not been investigated. Since many antihypertensive drugs act on receptors in the vasculature, we have developed a Sprague-Dawley (SD) rat thoracic aorta cell membrane chromatography (CMC) coupled with HPLC/MS method, based on ligand-receptor interactions, to screen for active components in S. semina. Firstly, a fraction was recognized and retained by the CMC column. This retained fraction was directed onto an ODS enrichment column, and then analyzed and identified by the HPLC/MS system through switching a two-position ten-port switch valve. In this study, the activity and reproducibility of CMC column and the enrichment rate were investigated by nifedipine which was used as a positive control. The results showed that our SD rat thoracic aortas CMC column was able to recognize receptor-active compounds in a complex system. Both the reproducibility of enrichment and the enrichment rate met the experimental requirements. Then, the methanol extract of S. semina was screened using this method. Sinapine, molecular weight 310 g/mol, was identified as a potential antihypertensive compound. To confirm the effect of the active component from S. semina, tension measurements were performed *in vitro* using isolated rat mesenteric arteries at a dose of 10^{-8}-10^{-4} mol/L, with nifedipine as the positive control. *In vitro* pharmacological experiments showed that sinapine was able to relax rat mesenteric artery rings. So, sinapine may have a potential antihypertensive effect.

Biography

Fen Wei is a PhD candidate in School of Pharmacy at Xi'an Jiaotong University. She has participated in 11 published papers in different journals and has acquired a patent as a participator. In addition, another three papers in which she is the first author are under review.

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