

Abstract

Radix Angelicae sinensis (*Danggui* in Chinese) is one of the most important traditional Chinese medicine, which has been used for tonifying blood, treating irregular menstruation and amenorrhoea for over 2000 years in China. Many analytical methods such as HPLC-UV, GC-MS and CE have been developed for quality control of *Danggui*. Ferulic acid is commonly used as the marker. However, ferulic acid is rarely found in the free form in plants. In previous study, coniferyl ferulate was found in *Angelica sinensis*. There are a few reports on its physical and chemical properties, pharmacological activities and the content in *Danggui*. This study focused on the preparation and pharmaceutical activity of coniferyl ferulate in *Danggui*.

1. The solvent extraction method for enrichment of coniferyl ferulate from *Danggui* oil, and a HPCPC method for purification of coniferyl ferulate were developed.
2. A rapid HPLC-DAD method was developed for the determination of coniferyl ferulate in *Danggui* and *Chuanxiong*.
3. The antiplatelet aggregation activity of coniferyl ferulate was tested *in vitro*.
4. Coniferyl ferulate in 13 species medicinal plants from Umbelliferae family were screened.

As a result, coniferyl ferulate could be enriched by solvent extraction and purified by HPCPC. The content of coniferyl ferulate in both *Danggui* and *Chuanxiong* is high which is significantly varied among the raw materials. The pharmacological assays showed coniferyl ferulate could inhibit platelet aggregation induced by adenosine diphosphate (ADP), arachidonic acid (AA) and thrombin (THR) *in vitro*. Compare with ferulic acid, coniferyl ferulate is more efficient, especially for inhibiting platelet aggregation induced by AA. After screening 13 species Umbelliferae herbs, including *Ligusticum sinense* Oliv., *Ligusticum jeholense* Nakai et Kitag., *Saposhnikovia divaricata* (Turcz.) Schischk., *Bupleurum chinense* DC., *Peucedanum praeruptorum* Dunn, *Foeniculum vulgare* Mill., *Angelica pubescens* Maxim. f. *biserrata* Shan et Yuan, *Angelica dahurica* (Fisch. Ex Hoffm.) Benth. Et Hook. f. var. *formosana* (Boiss.) Shan et Yuan, *Notopterygium incisum* Ting ex H. T. Chang, *Notopterygium forbesii* Boiss., *Peucedanum decursivum* Maxim., *Bupleurum marginatum* Wall ex DC. and *Pimpinella candolleana* Wight et Am., coniferyl ferulate is found in *Ligusticum sinense*, *Ligusticum jeholense* and *Notopterygium forbesii*.

Keywords: *Angelica sinensis*; coniferyl ferulate; solvent extraction/liquid-liquid extraction; HPCPC; HPLC; antiplatelet aggregation