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Simultaneous quantification of eight active flavonoids constituents in Gleditsiae Spina by high-performance liquid chromatography coupled with electrospray ionisation tandem mass spectrometry

Tiejie Wang, Kun Jiang, Jing Li, Yi Lu, Chang Su, Shuhong Wang, Jue Wang and **Guo Yin**
Shenzhen Institute for Drug Control, China

Gleditsiae Spina (GS, Zaojiaoci in Chinese), the thorn of Gleditsia sinensis Lam., is used as an anti-inflammatory, anti-tumor and antibacterial drug for hundreds of years in China and Japan. It is known that the main active constituents is flavonoid, however, there has been no specialized study on quantification the active constituents. The study was aimed at evaluating the contents of active flavonoids in GS, and laying a foundation for its further researches. In this study, we developed a method using high-performance liquid chromatography coupled with electrospray ionisation tandem mass spectrometry for determining 8 active flavonoids constituents: taxifolin, quercetin, quercitrin, rutin, isoquercitrin, dihydrofisetin, dihydrokaempferol, and eriodictyol in GS. Crude drugs of GS were extracted with 70% ethanol in ultrasound extraction. Chromatographic separation was performed on a Shim-pack C18 column (75 mm×2.0 mm, 2.2 μm) within 13 min. Gradient elution was applied using a mobile phase of 0.05% acetic acid/methanol with a flow rate of 0.20 mL/min. The detection was performed on a triple quadrupole tandem mass spectrometer by multiple reaction monitoring (MRM) mode via electrospray ionization (ESI) source. The method had good linearity (R2>0.9982), variations in the intra- and inter-day precision of all analytes were below 2.2%, and the accuracy was evaluated by a recovery test within the range of 99.6–101.9%. The method successfully quantified the 8 compounds in 34 sample batches of Gleditsiae Spina, and will be provide a new quality evaluation method for Gleditsiae Spina.

Biography

Tiejie Wang earned her PhD in 2007 in pharmaceutical analysis at Shenyang Pharmaceutical University and be a visiting scholar in 2009 at Hong Kong University of Science and Technology. Now she is the deputy director of Shenzhen Institute for Drug Control (SZIDC). Her primarily working areas are the quality assessment of the traditional Chinese medicine (TCM) by chemical pattern recognition techniques, drug quality standard research, effective substances and quality standard of TCM. She is also the member of 10th Chinese Pharmacopoeia Commission, adjunct professor and doctoral supervisor of Shenyang Pharmaceutical University. More than 100 papers have been published and 12 patents have been authorized.

wangtj88@163.com

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