

**Abstract:**

This task is one subtask of the modifications for the *China Pharmacopoeia* (2005 edition). The object of our research is to supply a reference standard of the chemical qualitative and quantitative method for quality control of *Fritillariae cirrhosae* materials. This thesis can be divided into four sections.

In section I, the progress on researches of chemical constituents and their pharmacological activities of *Fritillariae cirrhosae* materials was reviewed. Based on the previous studies, our researching schemes were fetched out.

In section II, the plant morphology, drug characters and the micrograph properties of *Fritillariae cirrhosa* materials were described. At the same time, a UV scan method and thin layer chromatography (TLC) methods were studied for the identification of those different *bulbus Fritillaria* species. In our current studies, firstly, we compared the UV scan spectra and their 1<sup>st</sup> derivative spectra of the extracts with 7 different extraction solvents among 3 *Fritillaria* species including *Fritillaria cirrhosa* D. Don., *F. thunbergii* Miq. and *F. ussuriensis* Maxim. According to the results, four solvents including water, ethanol, n-hexane and cyclohexane were selected. Moreover, the UV scan spectra and their 1<sup>st</sup> derivative spectra of the extracts with those 4 solvents were further studied among 9 *Fritillaria* species which were recorded in *China Pharmacopoeia* (2000 edition). Secondly, 5 main active alkaloids were selected according to the previous studies with our research group as the index points for the TLC differentiation of *Fritillaria cirrhosa* species. Furthermore, those 9 *Fritillaria* species were differentiated with our optimization chromatographic conditions. Based on our researching results, a chemical differentiation method for *Fritillaria* materials was established and supplied as a qualitative method.

In section III, a HPLC-ELSD method was established to detect the main active components in different sources of *Fritillariae cirrhosae* materials. Peimissine was selected among five alkaloids as the index point to control the quality of *Fritillariae cirrhosa* materials according to the analysis of 4 species of standard materials. In the further studies of 33 batches of different sources of *Fritillariae cirrhosae* materials, the content of peimissine was detected and the lower limit of its content in that material was

stipulated and the quality control standard was established. This standard was supplied as a reference to the *China pharmacopoeia* to control the quality of the *Fritillariae cirrhosa* materials. The supplied standard filled the gap which there is no quality control method in the current *China pharmacopoeia*.

In section IV, we used the established HPLC-ELSD method to compare the amount and distribution of 5 active alkaloids in 9 different species of *Fritillaria* materials which recorded in the current *China Pharmacopoeia* (2000 Edition). The corresponding peaks were identified with HPLC-MS method to ensure its veracity. This study supplied a basal chemical data to the differences among those 9 *Fritillaria* species.

In our present studies, a chemical qualitative method was recommended to differentiate the *Fritillariae cirrhosae* materials from some other *Fritillaria* materials recorded in current *China Pharmacopoeia*, and a quantitative method was established to detect the main active alkaloid in 9 species of *Fritillariae cirrhosae* materials. This established method was confirmed with a HPLC-MS method by identifying the corresponding peaks. These studied supplied an exclusive, repeated and feasible method to detect the content of the active component in *Fritillariae cirrhosa* materials.

**Key Words:** *Fritillariae cirrhosae*; *Fritillaria*; plant modality; medicinal materials characters; micrographs; UV scanning spectra; thin layer chromatography (TLC); high performance liquid chromatography- evaporating light scattering detection (HPLC-ELSD); HPLC-MS; qualitative analysis; quantitative analysis