ABSTRACT

Radix Puerariae (Pueraria root, kudzu root) is the root of *Pueraria lobata* (Willd.) Ohwi or *Pueraria thomsanii* Benth.

Radix Puerariae has been used as Chinese herb for a long time. The medical functions are as following: expels pathogenic factors from muscles and skin to reduce fever, promotes eruption, promotes the production of body fluids to quench thirst and invigorates the vital functions to relieve diarrhea. It has excellent effects cardiovascular system proved in pharmacology.

To establish a rapid and automatic quality control method for *Radix Puerariae*, three major biological active components of isoflavone including daidzein, daidzin and puerarin in *Radix Puerariae* , were extracted by pressurized solvent extraction (PSE) and the conditions were optimized. Analysis of isoflavones were performed by using both high performance thin layer chromatography (HPTLC) and high performance liquid chromatography coupling with diode array detector (HPLC-DAD).

1. Analysis of isoflavons from *Radix Puerariae* using HPTLC

HPTLC method for quantitative analysis of isoflavones from *Radix Puerariae* was developed. The results showed that it was not a good method for quantitative determination of the investigated isoflavones from *Radix Puerariae* because of its poor precision, reproducibility and resolution.

2. Analysis of isoflavone from *Radix Puerariae* using PSE and HPLC

Sample preparation, the bottleneck of most analytical procedures, is the key step for quality control of TCM. One of the most promising and sample preparation techniques is the PSE (Dionex trade name ASE for accelerated solvent extraction), which offers the advantages of reducing solvent consumption and allowing for automated sample handling. Isoflavones in *Radix Puerariae* were extracted by using PSE. The operating parameters including extraction solvent, particle size, pressure, temperature and extraction times were optimized by using univariate approach in order to obtain the highest extraction efficiency. The optimized conditions are as follows: solvent, methanol; temperature, 140 ℃; pressure, 1400psi and extraction time, 10 minutes. The results showed that PSE is a simple, efficient and rapid method with lower solvent consumption.

HPLC-DAD was also developed for quantitation of isoflavone in Radix Puerariae. Simultaneous determination of puerarin, daidzein and daidzin was performed using HPLC-DAD and PSE. The results showed that HPLC-DAD was a good method for quantitative analysis of isoflavones in Puerariaroot. The separation was performed in an Agilent Eclipse XDB-C18(150 x 4.6mm, 3.5 μ m) column with a mobile phase of methanol: 1 %HAC solution (gradient elution) , the detection wavelength was 250 nm.

Keywords：Pressurized solvent extraction; High performance liquid chromatography; High performance thin layer chromatography; puerarin; daidzein; daidzin; quality control.