

**Analysis of hydrophilic components in water
extract from *Polygonum multiflorum* using
micellar electrokinetic chromatography**

By

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Abstract

Polygonum multiflorum Thunb, *He-Shou-Wu* in Chinese, is a widely used traditional Chinese medicine as a tonic and anti-aging agent. Since its major application form is water decoction, it was aimed to develop a simple and fast analytical method to analyze its hydrophilic bioactive components in its water extract. Therefore, pressurized liquid extraction and short-end injection micellar electrokinetic chromatography (MEKC) method were established for simultaneous determination of hydrophilic components including one alkaloid (hypaphorine), one stilbene (2,3,5,4'-tetrahydroxystilbene 2-O- β -D-glucoside), and five polyphenols (proanthocyanidin B1, proanthocyanidin B2, catechin, epicatechin, and gallic acid) in water extract of *He-Shou-Wu*. Method development was systematically investigated, the influence of parameters, such as pH, capillary temperature, separation voltage, concentration of phosphate, SDS and HP- β -CD, on the analysis were carefully investigated. Optimum separation was obtained within 14 min by using 50 mM phosphate buffer containing 90 mM SDS and 2% (m/v) HP- β -CD (pH 2.5) at 15 kV and 20 °C. All calibration curves showed good linearity ($R^2 > 0.9978$) within test ranges. The overall LOD and LOQ were lower than 2.0 $\mu\text{g/mL}$ and 5.5 $\mu\text{g/mL}$, respectively. The RSDs for intra- and inter-day of seven analytes

were less than 3.2% and 4.6%, and the recoveries were 97.0-104.2%. The validated method was successfully applied to the analysis of *He-Shou-Wu* samples collected from different regions of China, which is helpful for the quality control.



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