

Separation of Schizandrin, Schizandrin A, and Schizandrin B in a Tablet Sample

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Key Words

- *Schisandra chinensis* (Turcz.) Baill
- Hugin Tablets
- Traditional Chinese Medicine
- UHPLC

Introduction

Schisandra chinensis (Turcz.) Baill is an important traditional Chinese medicine believed to be an anticarcinogen and provide hepatoprotection, among other attributes. Its major active components are lignanoids, and the three major lignanoids are schizandrin, schizandrin A, and schizandrin B¹ (structures shown in Figure 1). Hugin tablets, which contain *Schisandra chinensis* (Turcz.) Baill, are a traditional Chinese medicine for hepatoprotection. The Pharmacopoeia of the People's Republic of China (PPRC) 2010 regulates its quality control with a UHPLC method for the determination of schizandrin, schizandrin A and schizandrin B.²

The work shown here describes an efficient UHPLC method to determine schizandrin, schizandrin A, and schizandrin B in Hugin tablets for product quality control. The separation was performed on a Thermo Scientific Acclaim Rapid Separation Liquid Chromatography (RSLC) 120 C18, 2.2 μm (2.1 \times 100 mm) column based on the chromatographic conditions in the PPRC monograph. The chromatograms of schizandrin, schizandrin A, and schizandrin B in a Hugin tablet sample (Suzhong Pharmaceuticals Co., Ltd., Jiangsu, China) are shown in Figure 2. The UV spectra of the three analytes collected in the standard and tablet sample are highly consistent. The calculated peak purity match factors for schizandrin, schizandrin A, and schizandrin B separated from the tablet sample extract are all 1000 (the corresponding value for 100% purity). Good separations between the analytes and other compounds were achieved with resolution (R_s) \geq 1.9. These results demonstrate that the Acclaim™ RSLC 120 C18 column provides good selectivity and suitability for determination of schizandrin, schizandrin A, and schizandrin B in the Hugin tablet sample.

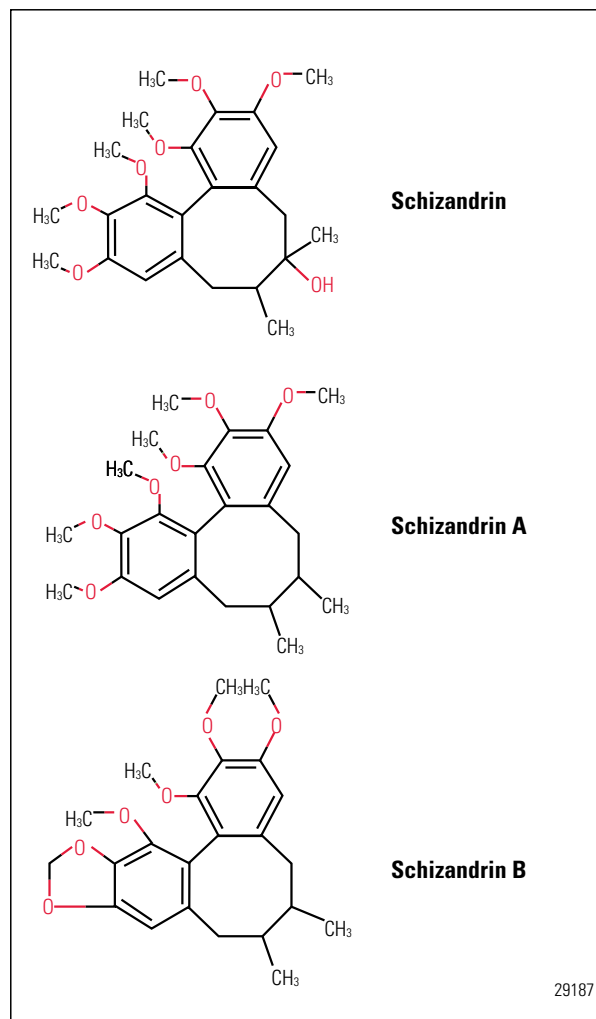


Figure 1. Structures of the three major active components of *Schisandra chinensis* (Turcz.) Baill.

Column: Acclaim RSLC 120 C18 (2.1 × 100 mm, 2.1 μm)
 Mobile phase: CH₃CN/H₂O, in gradient: CH₃CN: 0–3 min, 45%; 3–5 min, 45–80%; 15.1 min, 80–100%; 17 min, 100%
 Flow Rate: 0.4 mL/min
 Injection Volume: 2 μL
 Temperature: 40 °C
 Detection: UV at 250 nm
 Chromatograms: A) Standards
 B) Tablet sample

Peaks: 1. Schizandrin
 2. Schizandrin A
 3. Schizandrin B

UV spectra: **A1** peak 1 of standard
A2 peak 2 of standard
A3 peak 3 of standard
B1 peak 1 of sample
B2 peak 2 of sample
B3 peak 3 of sample

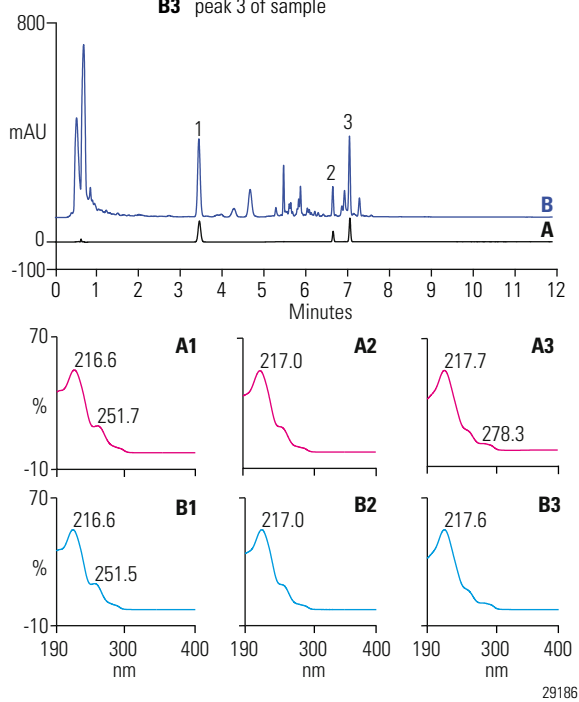


Figure 2. Chromatograms of a schizandrin, schizandrin A, and schizandrin B mixed standard and a Hugin tablet sample.

Equipment

Thermo Scientific Dionex UltiMate 3000 RSLC system, including an HPG-3400RS Binary Pump with Solvent Selector Valves, WPS 3000RS Autosampler, TCC-3000RS Thermostatted Column Compartment, and DAD-3000RS Diode Array Detector, plus Thermo Scientific Dionex Chromeleon 6.80 SR9 Chromatography Data System software or higher.

Sample Preparation²

Put 0.7 g of sample powder to 25 mL of water-saturated ethyl acetate, and weigh the mixture. Ultrasonically extract (500 W and 60 KHz) for 30 min. After the solution cools to room temperature, replace the lost weight with ethyl acetate. After filtering, dry 15 mL of filtrate using a rotary evaporator. Dissolve the residue in 5 mL methanol.

References

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2. Pharmacopoeia Commission of the Ministry of Health of the People's Republic of China. *Pharmacopoeia of the People's Republic of China*, 9th ed.; China Medical Science and Technology Press, **2010**; Vol. 1, pp 760.

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