Reveleris® iES System Purifies Ferulic Acid in Rhizoma Chuanxiong Extract with Greater Recovery

Reveleris® iES Flash Chromatography System

Introduction

Medicinal plants are an important resource for drug development. They are commonly analyzed in biochemical, pharmaceutical, and clinical research for their complex constituents and low quantities of bioactive ingredients.

Ferulic acid is known to be one of the main bioactive components found in Rhizoma chuanxiong.[1] The plant has been extracted here and used for the separation and identification of its scarce ingredients using the Reveleris® iES flash chromatography system.

Experimental

Extraction Conditions

Extract type: Pulverized
Weight: 2 g
Extraction solvent: Ether
Solvent volume: 40 mL
Ultra-sonication: 20 min

Run Conditions

Cartridge: Reveleris® silica 12g
Flow rate: 25 mL/min
Equilibration: 3.0 min
UV1 wavelength: 254 nm
UV2 wavelength: 280 nm
ELSD carrier: Iso-proponal
Injection type: Liquid
Solvent A: Hexane
Solvent B: Ethyl acetate

Gradient Method

Step	Time (min.)	%B
1	0	0
2	3	0
3	8.8	5
4	0.5	6
5	2.6	33
6	5.2	98
7	2.6	98

HPLC Conditions

Column: Alltima™ silica 5µm, 250 x 4.6 mm (PN: 88171)
Flow rate: 1 mL/min
UV Detector: 280 nm
Mobile phase: **A:** 1% Formic acid in Hexane
B: 1% Formic acid in Ethyl acetate

Gradient Method

Step	Time (min.)	%B
1	0	0
2	10	50
3	10	100

Results and Discussion

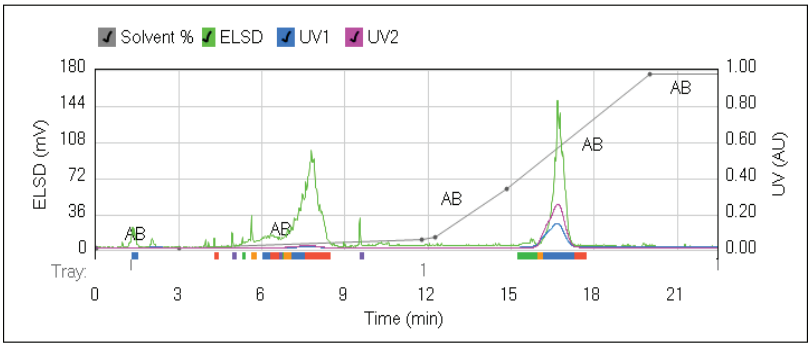

Figure 1: Separation of Rhizoma chuanxiong extract shows the detection of peaks using the UV and the evaporative light scattering detectors.

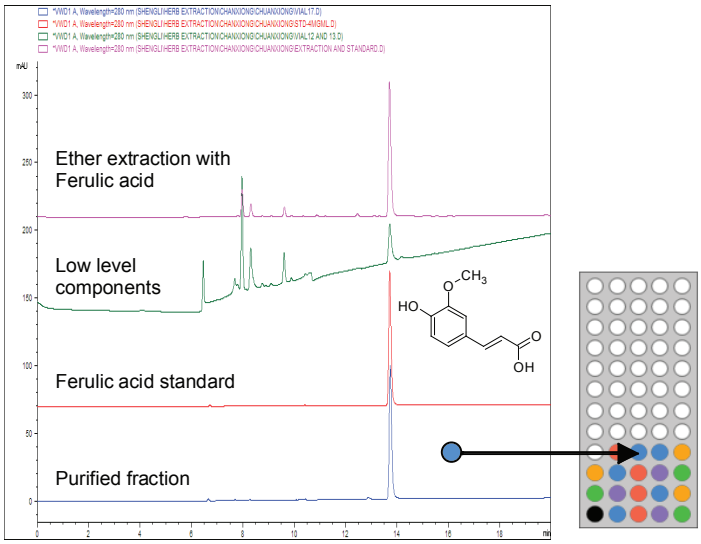

Figure 2: Ferulic acid recovery = 97% (calculated by peak area)

Conclusion

Using the sensitive Reveleris® iES flash chromatography system, the critical components of the plant extract at low levels have been isolated and collected. The RevealX™ technology also allows non-chromophoric peaks to be detected with the chromophoric ones in the same run for fraction collection and further analysis. This allows purification of compounds present in the natural product extract, compounds that are not always easily detectable using traditional flash chromatography system and are present at low amounts and useful for medicinal purposes.

References

1. Chen, X.; Kong, L.; Su, X.; Fu, H.; Ni, J.; Zhao, R.; Zou, H.; Separation and identification of compounds in Rhizoma chuanxiong by comprehensive two-dimensional liquid chromatography coupled to mass spectrometry; J. Chromatograpy A, 1040, (2004), pp. 169-178.

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6/2011 M355

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