

# Characterization of Medicinal Plants in Traditional Chinese Medicine (TCM): Fully Automated and Unattended

## Extraction of Rhizome from Coptidis and Ginseng Root Powders

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### General

- Reproducible preparation of analytical samples is a time consuming, yet highly important step in each routine analysis.
- Characterization of each part (roots, bark, leaves etc...) of a medicinal herb is necessary to systematize TCM.
- Each medicinal herb needs to be analyzed many times to rule out local effects and changes in composition caused by different times of harvest.
- Reliable automated sample preparation therefore, is a prerequisite to routinely prepare a great number of samples with reproducible quality.

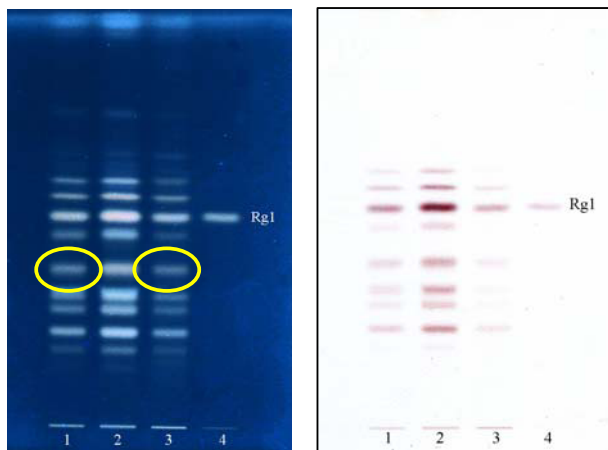
### Objective

- Integrate standard multi-step extraction protocols on a Chemspeed sample prep workstation system.
- Compare the extracts with independent reference samples by automated TLC.
- Determine whether the quality of the samples prepared in an automated fashion matches that of the reference samples.

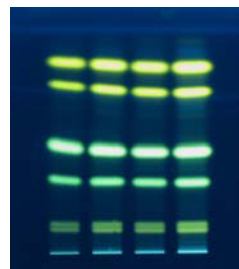
### Experimental Set-up

- Automated dispense of 1g powdered sample in 40mL chloroform
- Heating of 1h @ 60°C, then cool to RT
- Filtration and evaporation @ 30°C for 15 min.
- Addition 5mL water and 10mL butanol
- Liquid extraction @ 1400rpm
- Filtration and addition of ammonia solution
- Liquid extraction @ 1400rpm 15 min. then 5 min. rest
- Evaporation @ 50°C for 30 min.
- Dissolve the residue of the supernatant liquid in 1 ml of methanol
- TLC on CAMAG System

### Results



**Ginseng Root Powders:** 1, Automated sample prep 1µL; 2, Automated sample prep 2µL; 3, Manual sample prep 1µL; 4, Reference sample: ginsenoside-Rg1 2µL



**Rhizome from Coptidis Powder:** 1, Automated sample prep 0.5µL; 2, Sample prepared by Chemspeed 1µL; 3, Reference Sample 1µL; 4, Reference Sample 2µL

### Summary

The samples prepared on a Chemspeed sample prep workstation are in accordance with manually prepared reference samples, or even surpass them.

An increase in productivity by several orders of magnitude, in terms of samples processed per workday, can be achieved for any kind of routine analysis.

The higher resolution achieved by automated sample prep (see yellow markings on the first TLC), indicates a higher quality and reproducibility that results from automated sample preparation.

The classical bottleneck, manual sample preparation always stood for, can thus be eliminated through Chemspeed's automated parallel sample preparation.

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