



Analysis of Rhein and Emodin in Rhubarb Root Extract (*Rheum Palmatum*) by HPLC

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The rhubarb root exerts a gentle laxative effect by stimulating the secretion of bile into the intestines. It also stimulates the gall duct to expel toxic waste matter, thus purging the body of waste bile and food. As a result, the liver is cleansed and chronic liver problems are relieved.

The HPLC method described here shows the separation of rhein and emodin in the extract of the rhubarb root (*Rheum palmatum*) using gradient analysis on a reversed phase column and UV detection. The autosampler temperature was set to 4 °C to avoid decomposition of the samples.

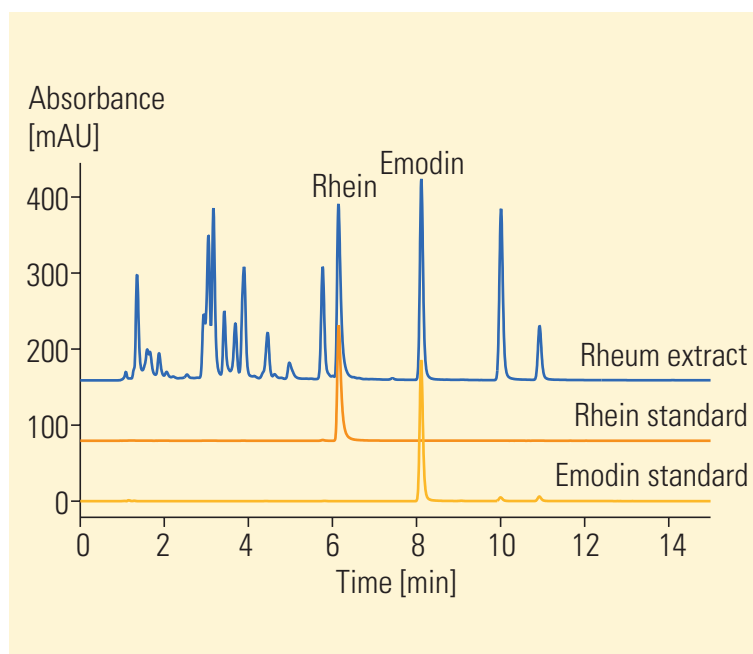


Figure 1
Analysis of *rheum palmatum* root extract

Conditions

Column

4 x 125 mm Hypersil ODS, 5 µm

Mobile phase

A = 0.05 M NH₄OAc in water (pH = 2.5), B = acetonitrile

Flow rate

1.0 ml/min

Gradient

at 0 min in 30 % B
at 10 min 80 % B

Column wash

at 14 min 80 % B
at 15 min 30 % B

UV detector

variable wavelength detector
440 nm, standard cell

Column compartment temperature

25 °C

Stop time

15 min

Post time

5 min

Injection volume

1 µl



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Extraction

5 g dried rhubarb root were extracted ultrasonically twice with 50 ml methanol for 30 minutes. The extract was filtered and the solvent evaporated *i. vac.* The residue was dissolved in 5 ml methanol and applied to HPLC.

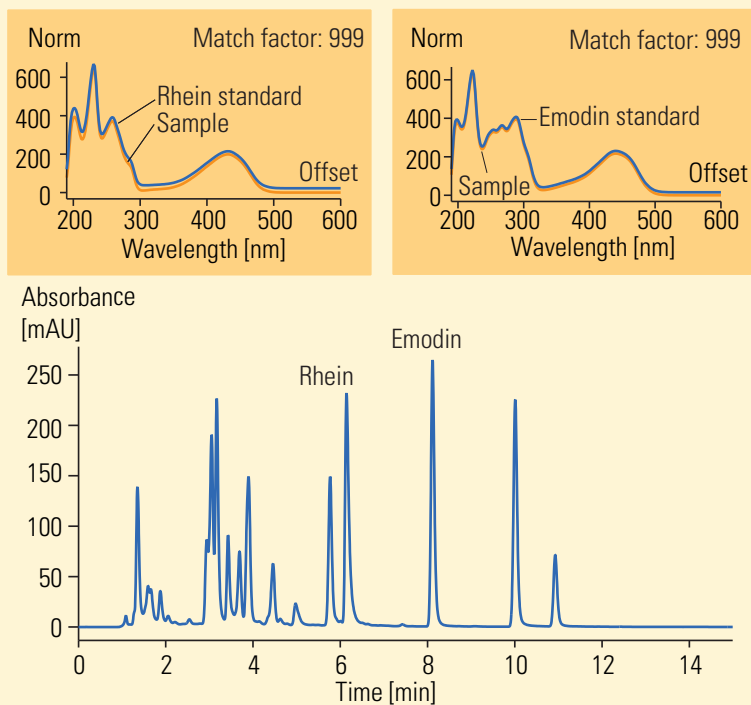


Figure 2
Comparison of sample and standard spectra

The HPLC method presented here shows an easy but reliable and precise analysis of rhein and emodin in the extract of *rheum palmatum*.

Equipment

Agilent 1100 Series

- Quaternary pump (includes vacuum degasser)
- Thermostatted autosampler
- Thermostatted column compartment
- Variable wavelength detector, standard flow cell 10-mm path length, 13- μ l cell volume

Alternative:

- Binary pump
- Vacuum degasser
- Diode array detector standard flow cell 10-mm path length, 13- μ l cell volume
- Agilent ChemStation + 3D software

Columns

- Hypersil ODS, 5 μ m, 4 x 125 mm (Agilent part number 7992618-564)
- *Recommended:* Guard cartridges Hypersil ODS, 5 μ m, 4 x 4 mm (Agilent part number 7992618-504, 10/pk)

Note:

Since the method was specifically developed on the Agilent 1100 Series system you might not be able to reproduce this analysis on an older system or even on a new system with lower performance. To avoid sample decomposition it is necessary to use a cooled autosampler, for example, the Agilent 1100 Series thermostatted autosampler.

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