

Analysis of Keratolytic Drugs by HPLC

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Abstract

Keratolytic drugs are substances contained in dermatological or skin-care products, which help remove, for example, warts, corns or calluses by softening the skin. They are usually applied as ointment, tincture or plaster.

The HPLC method described here separates three common keratolytic drugs using isocratic analysis on a reversed phase column and UV detection. A detector program was used because of the different absorbance maxima of the compounds.



Figure 1 Analysis of three keratolytic drugs

Conditions

Column 4.6 x 75 mm Zorbax SB-C18 3.5 µm Mobile phase $A = 0.05 \text{ M NH}_{4} \text{OAc}$ in water $(pH = 2.2 \text{ with } H_2SO_4)$ B = acetonitrile Flow rate 1.2 ml/min Isocratic 20 % for 10 min **UV** detector variable wavelength detector: 204 nm for 2.2 min 230 nm for 1 min 204 nm, standard cell **Column compartment temperature** 50 °C Stop time 10 min **Injection volume** 5μl



Agilent Technologies Innovating the HP Way The performance of the HPLC method is shown in the table below.

Compound	LOD for S/N=2 (mg/l)*	Precision of RT (RSD of 10 runs) (1000 mg/l)*	Precision of Area (RSD of 10 runs) (1000 mg/l)*
Phthalic acid	2.0	0.16	0.73
Benzoic acid	2.0	0.09	0.35
Salicylic acid	2.0	0.08	0.48

* Injection volume: 5 µl

The HPLC method presented here shows an easy but reliable and precise analysis of the keratolytic drugs phthalic acid, benzoic acid and salicylic acid. The values for LOD, precision of RT and precision of area show the good performance of the analysis.

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. A programmable variable wavelength detector, for example, the Agilent 1100 Series variable wavelength detector is needed because of different absorbance maxima of the compounds. Alternatively, the Agilent 1100 Series diode array detector can be used.

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Equipment

Agilent 1100 Series

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

Alternative:

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

Columns

- Zorbax SB-C18, 3.5 µm, 4.6 x 75 mm (Agilent part number 866953-902)
- Recommended: Guard cartridges Zorbax SB-C18, 5 μm, 4.6 x 12.5 mm (Agilent part number 820950-920, 4/pk)

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