



Analysis of Antitumor Drugs by HPLC

Udo Huber

Pharmaceutical

Paclitaxel (Taxol) is an antileukemic and antitumor agent first isolated from the bark of the Pacific yew tree *Taxus brevifolia*. It promotes the assembly of microtubules and inhibits the tubulin disassembly process. Due to its difficult total synthesis it is produced either by semi synthesis or from plant cell tissue. Paclitaxel is in the clinical trial phase in the United States.

Figure 1 shows the chromatogram of paclitaxel 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.

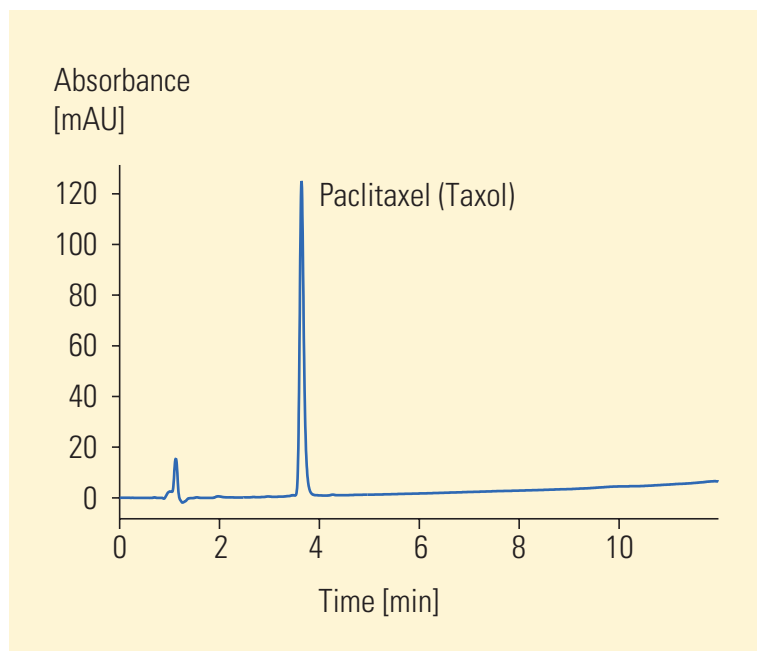


Figure 1
Analysis of paclitaxel

Conditions

Column

4 x 125 mm Hypersil ODS, 5 µm

Mobile phase

A = water, B = acetonitrile

Flow rate

1.0 ml/min

Gradient

at 0 min 50 % B

at 10 min 90 % B

Column wash

at 12 min 50 % B

UV detector

variable wavelength detector

204 nm, standard cell

Column compartment temperature

25 °C

Stop time

12 min

Post time

5 min

Injection volume

5 µl



Agilent Technologies

Innovating the HP Way

HPLC Performance

Compound	LOD for S/N=2 (mg/l)*	Precision of RT (RSD of 10 runs (100 mg/l)*	Precision of Area (RSD of 10 runs) (100 mg/l)*	Linearity Correlation factor- (0.1-100 mg/l)*
Paclitaxel (Taxol)	0.1	0.07	0.79	1.00000

* Injection volume: 5 µl

The performance of the HPLC method is shown in the table above.

The HPLC method presented here shows an easy but reliable and precise analysis of the antitumor drug paclitaxel (taxol). The values for LOD, precision of RT, precision of area and linearity show the good performance of the HPLC analysis.

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-µl cell volume

Alternative:

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

Columns

- Hypersil ODS, 5 µm, 4 x 125 mm (Agilent part number 7992618-564)
- *Recommended:* Guard cartridges Hypersil ODS, 5 µm, 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.

© Copyright 1998 Agilent Technologies
Released 12/98
Publication Number 5968-2886E



Agilent Technologies

Innovating the HP Way