

Switching the Mobile Phase from Acetonitrile to Methanol

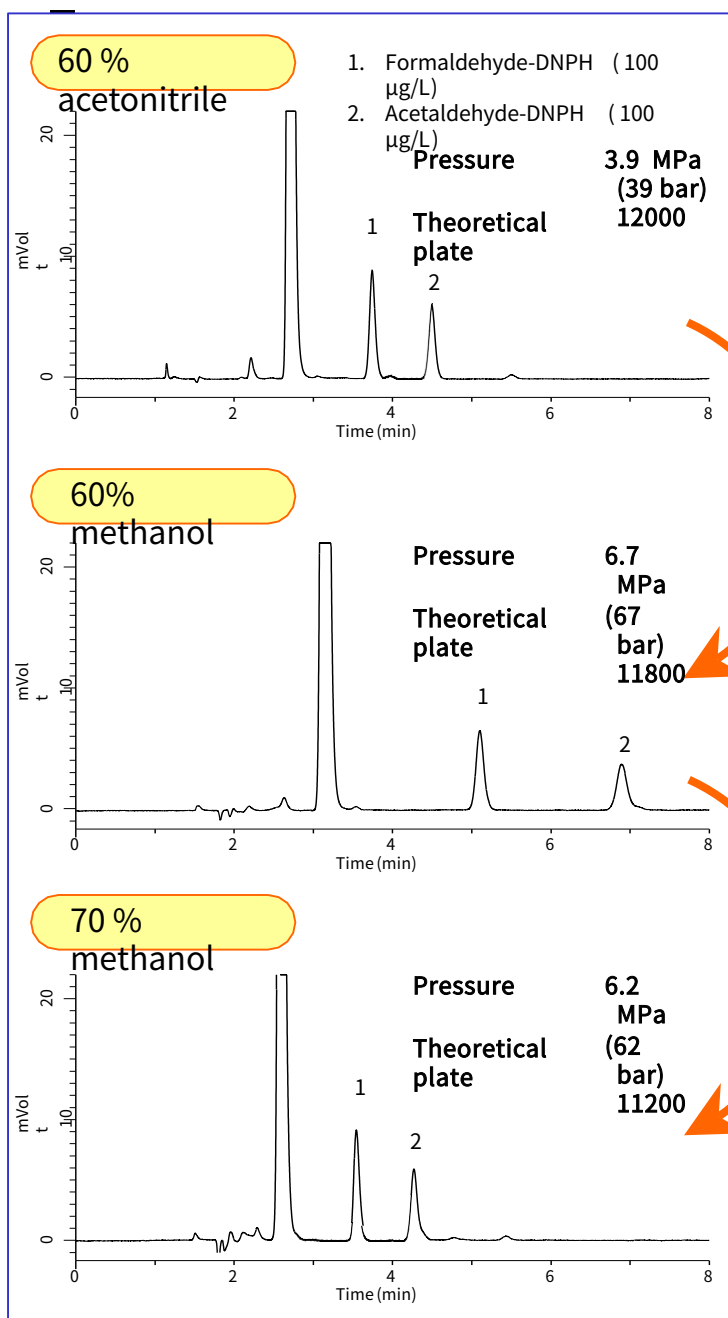
Today, the supply shortage of acetonitrile, which is one of the most widely used organic solvents in HPLC analysis, became extremely hot topic. Raw acetonitrile is obtained as a co-product of acrylonitrile, which is used in automobile component. As a consequence of the global economic recession and the associated reduction of demand for acrylonitrile, there has been a serious decrease in the supply

of acetonitrile.

Methanol, which is also widely used as mobile phase, is easily available at a low price. In this note, how to use methanol instead of acetonitrile is described. What should be paid attention to are elution strength, elution order, and back pressure.

(K.Suzuki)

< Example 1.



Conditions

System : LC800 HPLC system
Column : Inertsil ODS-SP (5 µm, 150 × 3.0 mm I.D.)
Eluent : CH₃CN / H₂O or CH₃OH / H₂O
Flow : 0.6 mL/min
Col. Temp. : 40 °C
Detection : UV 360
Inj. Vol. : 10 µL

: Mobile phase composition

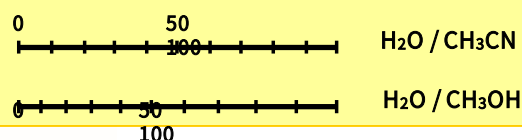
Elution strength tends to decrease. Depending on the samples, the elution order may change.

The back pressure becomes high. (See also next page.)

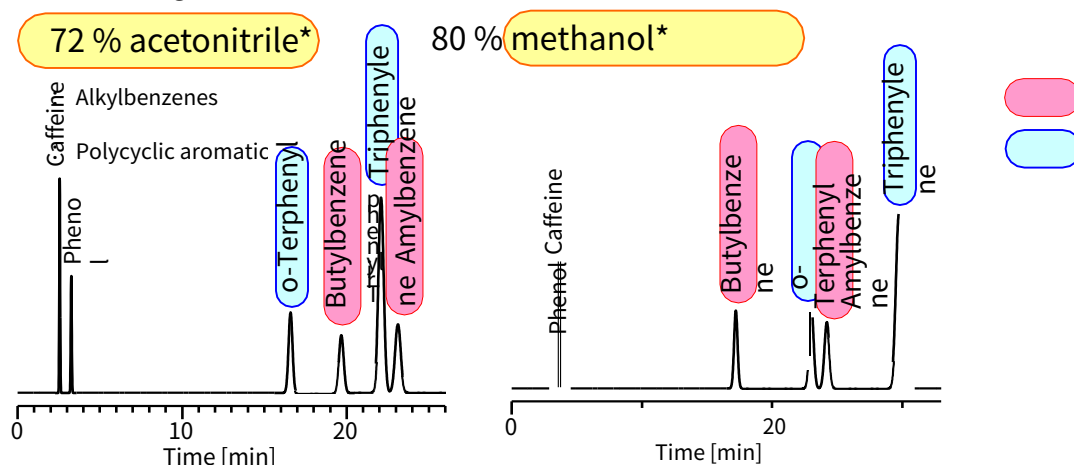
Methanol concentration should be increased to adjust retention times.

An indicator for elution strength

With a line perpendicular to the scales below, mobile phase composition which provides similar retention times can be obtained.



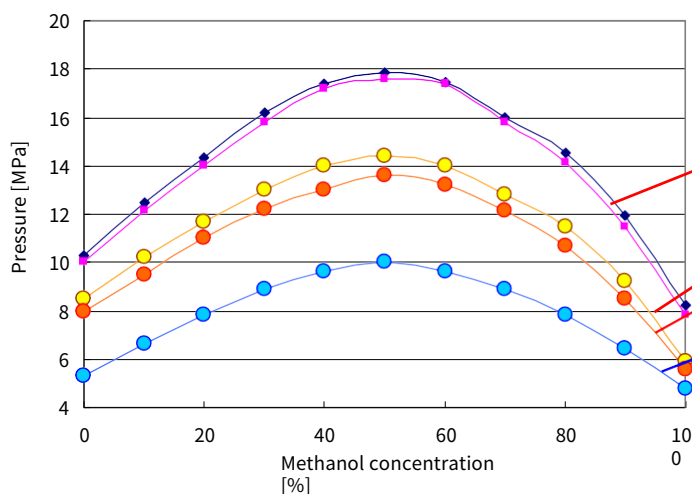
Switching from acetonitrile to methanol may cause changes in the elution order as the chromatograms shown below.



* The compositions were adjusted to obtain similar retention times.

Back pressure comparison among commercially available ODS columns

Even among ODS columns with the same specifications (inner diameter, length, and particle size), the column back pressure varies with the packed particles. In case the pressure becomes too high, HPLC system and the column itself may be damaged.



Other ODS columns

Inertsil ODS-4

Inertsil ODS-

SP

Inertsil series are advantageous in switching to methanol because the columns provide the lowest back pressure in the world!

Column size: 250 x 4.6 mm I.D., 5 μ m
Flow rate: 1.0 mL/min
Column Temp.: 40 $^{\circ}$ C

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