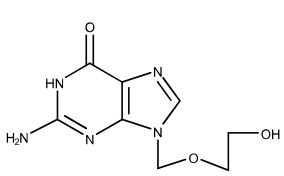
CoAp # 2018-6

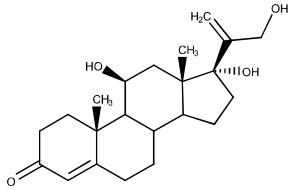
Cool Applications

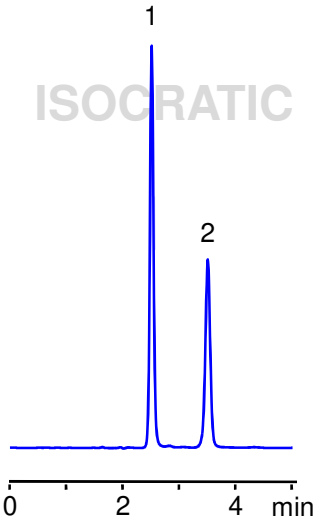
"Making Tough LC Applications Look Cool"

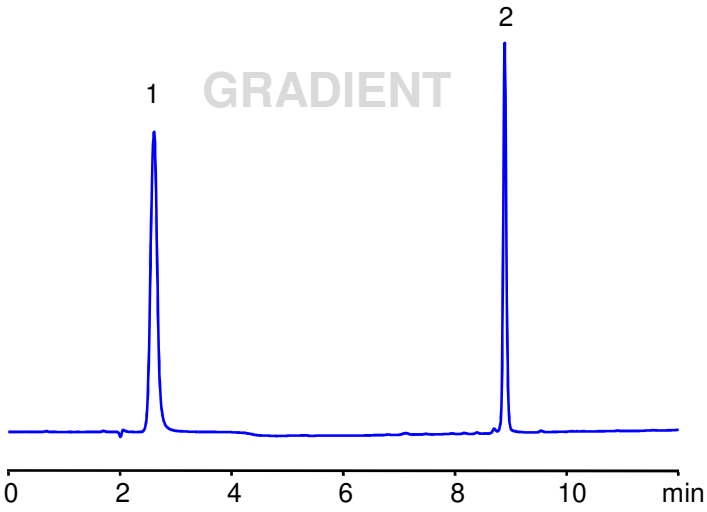
HPLC SEPARATION OF MIXTURE OF ACYCLOVIR AND HYDROCORTISONE

1	Acyclovir	2	Hydrocortisone









Column:	**Primesep 100**
Column size:	3.2 x 150 mm, 5 µm
Part number:	100-32.150.0510
Mobile phase:	35% ACN with H_2SO_4 – 0.1%
Flow rate:	0.5 ml/min
Detection:	UV 254 nm

Column:	**Newcrom R1**
Column size:	3.2 x 150 mm, 3 µm
Part number:	NR1-32.150.0510
Mobile phase:	Gradient 2-80% ACN 10 min H_2SO_4 - 0.1%
Flow rate:	0.5 ml/min
Detection:	UV 254 nm

Application Comments

Compounds of significantly different polarity are easy to resolve on reverse phase HPLC columns. In this situation, a gradient elution is usually required to obtain a reasonable retention time for all compounds. However the gradient is not always desirable especially for high throughput mode of operation.

- Extra work would be required to prepare two different solvents for the mobile phase.
- Run time is long.
- Additional time is required for column equilibration prior to each injection.

A mixture of acyclovir and hydrocortisone is a such example. Often they are both constituted in topical creams used to treat cold sores/fever blisters. Acyclovir is a polar molecule (logP = – 1.2) while hydrocortisone (logP = ~1.7) is a hydrophobic compound. Their separation on a reverse phase 150 mm, 5µm column would take 10+ minutes. The same separation, but much faster, can be obtained on a Mixed-Mode (Primesep 100) column with simple isocratic mode of elution. For LC-MS compatible conditions the sulfuric acid can be substituted by TFA or ammonium formate.