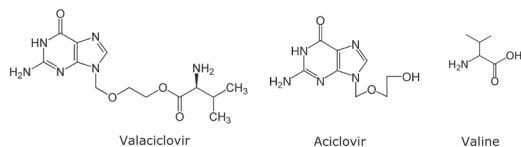
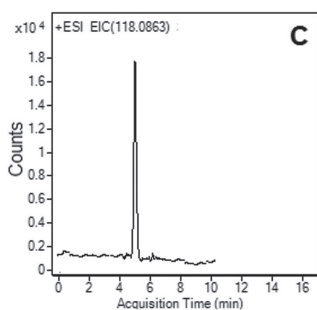
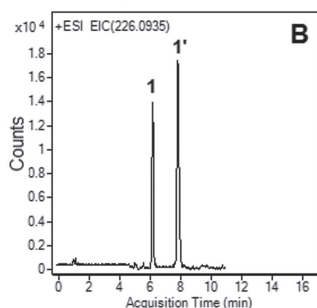
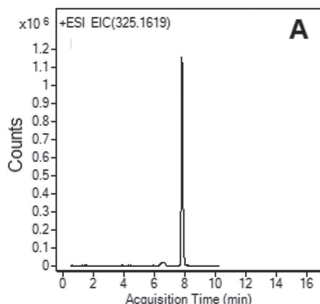


# Forced Degradation of Valaciclovir with LC-MS

## Separation of prodrug from two degradants



**Sample: Stock Solution:** 1000 mg strength Valtrex® tablet was ground and added to 100mL volumetric flask containing 50mL 50/50 DI H<sub>2</sub>O / acetonitrile diluent. The solution was sonicated 10 min, diluted to mark, and mixed. A portion was filtered through a 0.45µm nylon syringe filter (MicroSolv Tech Corp.). The stock solution was diluted 1:100 with 50/50 acetonitrile / DI H<sub>2</sub>O (Fig. A). Another aliquot was diluted 1:100 with 50/50 1N HCl / acetonitrile mixture and heated at 85°C for 30 min (Fig. B and C).

### Method Conditions

**Column:** Cogent Diamond Hydride™, 4µm, 100Å

**Catalog No.:** 70000-15P-2

**Dimensions:** 2.1 x 150 mm

**Solvents:** A: DI H<sub>2</sub>O / 0.1% formic acid (v/v)

B: Acetonitrile / 0.1% formic acid (v/v)

Gradient:	time (min.)	%B
	0	95
	1	95
	6	40
	7	40
	8	95

**Post Time:** 3 min

**Injection vol.:** 1µL

**Flow rate:** 0.4 mL/min

**Detection:** ESI - POS - Agilent 6210 MSD TOF mass spectrometer

**Figures:** Fig. A: Valaciclovir 325.1619 m/z

Fig. B: Acyclovir 226.0935 [M+H]<sup>+</sup> (degradant/ active form). Peaks 1 and 1' have the same mass. 1' is the peak that corresponds to the acyclovir formed in the source.

Fig. C: D,L-Valine, 118.0863 m/z [M+H]<sup>+</sup>

**t<sub>0</sub>:** 0.9 min

### Discussion

At this time, no method is available in the literature for the determination of the anti-viral herpes drug valaciclovir and its degradation products using Aqueous Normal Phase Liquid Chromatography and MS detection. Method development was done using UV detection, where excellent separation between the prodrug valaciclovir and its active converted compound, acyclovir, was obtained. The method transfer from UV to MS detection was accomplished using only a change of the flow rate. When MS detection was used, a second degradant (D,L-valine, formed from hydrolysis of the prodrug) was also detected without derivatization.