SUMMARY

✓ Simultaneous Determination of Acyclovir and Valacyclovir in Human Plasma

A simple, sensitive and selective LC-MS-MS method has been developed for the simultaneous determination of acyclovir and valacyclovir in human plasma. Acyclovir and valacyclovir in plasma were concentrated by solid phase extraction. The method was validated over a linear range of 47.0-10,255ng/mL and 5.1-1,075ng/mL for acyclovir and valacyclovir respectively. The sensitivity and simplicity of the method makes it rapid (3.0min) enough to be applied for the routine therapeutic monitoring of the drug.

✓ Determination of Abacavir in Human Plasma for Pharmacokinetic Studies

A simple, rapid, sensitive, selective and high performance liquid chromatography method with MS/MS was developed and validated for determination of abacavir in human plasma. Extraction from the plasma was carried out by liquid-liquid extraction. The method has good reproducibility over the concentration range 20-10000ng/mL. The lower limit of quantitation is 20ng/mL. This simple, rapid and robust assay will be helpful in processing of large number of samples with minimal injection volume (5µL) and run time (3.0min) for pharmacokinetic studies of abacavir in human plasma.

✓ Determination of Penciclovir in Human Plasma

A rapid, specific and sensitive liquid chromatography tandem mass spectrometry (LC–MS/MS) method was developed and validated for the determination of penciclovir in human plasma. The method involves simple, one-step SPE procedure coupled with C18 column (75mm x 4mm, 3µm) with a flow rate of 0.5mL/min. The method was validated over the concentration range 52.555-6626.181ng/mL. Low injection volume (5µL) are of particular advantage when coupled to electrospray mass spectrometry, reducing ion suppression and offering superior sensitivity and, hence lower limits of detection, higher sensitivity, and satisfactory selectivity. Minimal run time (2.5min) and lesser injection volume is the major advantage for processing larger pharmacokinetics samples which increases productivity and cost effective.

✓ Determination of Oseltamivir Phosphate and its Active Metabolite Oseltamivir Carboxylate in Human Plasma

A rapid, sensitive and rugged solid-phase extraction ultra performance liquid chromatography tandem mass spectrometry (LC-MS/MS) method was developed and
validated for determination of oseltamivir phosphate and oseltamivir carboxylate in human plasma. The procedure for sample preparation includes simple SPE extraction procedure coupled with using a C18 column (50 x 3.0mm, 3.0μm) with a flow-rate of 0.600mL/min. The method was validated over a concentration range 0.92-745.98ng/mL and 5.22-497.49ng/mL for oseltamivir phosphate and oseltamivir carboxylate respectively. This method will be helpful in processing of large number of samples with minimal run time (1.0min) and low injection volume (5μL) for pharmacokinetic studies of oseltamivir phosphate and oseltamivir carboxylate in human plasma which will be helpful in therapeutic drug monitoring, increasing its scope in clinical research arena to combat swine flu effectively.

- **Determination of Darunavir in Human Plasma**
  A simple, rapid, sensitive, selective and high performance liquid chromatography method with MS/MS was developed and validated for determination of darunavir in human plasma. SPE technique was adopted for extraction procedure and the assay linearity ranged 50.14-20007.43ng/mL. This simple, rapid and robust assay will be helpful in processing of large number of samples with minimal run time (2.5min) for pharmacokinetic studies of darunavir in human plasma.

- **Determination of Ritonavir, Lopinavir and Oseltamivir Phosphate and its Active Metabolite Oseltamivir Carboxylate in Human Plasma**
  A simple, sensitive and selective LC-MS-MS method has been developed and validated for oseltamivir phosphate and its active metabolite oseltamivir carboxylate, ritonavir and lopinavir in human plasma. All above mentioned drugs in plasma were concentrated by solid phase extraction and chromatographed on a C18 column (100 x 4.6mm, 5μm) using a mobile phase of 0.1% formic acid: methanol (20:80% v/v). The method was validated over a linear range of 1.03-750.61, 10.24-7506.68, 5.11-1002.32 and 51.01-100002.50ng/mL, for oseltamivir phosphate, its active metabolite oseltamivir carboxylate, ritonavir and lopinavir respectively. This method will be helpful in processing of large number of samples which it could be applied for routine therapeutic monitoring of the drug and its pharmacokinetic studies.