

Analysis of Oseltamivir Carboxylate in river water by LC-MS/MS

Oseltamivir phosphate (OP), commonly known as Tamiflu, is prescribed for the treatment of influenza. It is metabolized in vivo to form oseltamivir carboxylate (OC), which inhibits the proliferation of viruses. However, 74% of OC is excreted in the urine and because it is difficult to remove OC from sewage using an activated sludge process, its effects on the environment are a concern as it has been detected in ground water during an outbreak of influenza.¹

This application describes an LC-MS/MS method, based on a TSKgel ODS-100V, 3 μ m reversed phase column using OC obtained by alkaline hydrolysis of OP. Under the developed analytical conditions, the calibration curve was confirmed to be linear over a concentration range of 1.0 to 500 μ g/L, and the instrument detection limit (IDL) was 0.2 μ g/L. When samples were concentrated 500-fold by a pretreatment process the IDL was 0.4ng/L. After spiking river water with 5ng/L of OC, recovery was \geq 85%.

¹⁾ Ghosh, G.C. et al., *Environ. Health. Perspect.*, 118, 103-107 (2010)

Figure 1. Structures of OP and OC

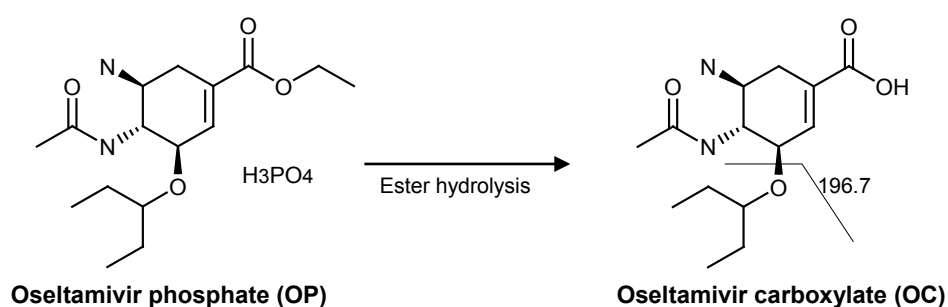


Figure 2. MRM chromatogram of OC standard sample (5 μ g/L)

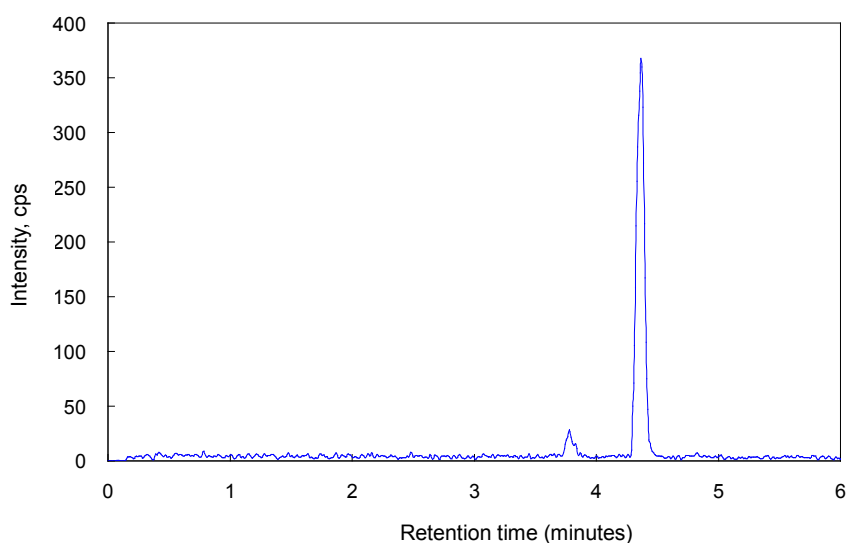


Table 1. Analytical conditions

Column:	TSKgel ODS-100V, 3 μ m, 2.0mm ID x 7.5cm
Mobile phase:	A: 20mmol/L ammonium formate, pH 3.75 B: methanol
Gradient:	0min (20%B) \rightarrow 7min (100%B) \rightarrow 8min (100%B) \rightarrow 9min (20%B)
Flow rate:	0.2mL/min
Temperature:	40°C
Injection vol.:	2 μ L
Instrument:	Agilent 1200SL series QTRAP [®] (AB SCIEX)
Ion source:	ESI (Positive) <i>m/z</i> : 285.1/196.7

Figure 3. Sample pretreatment (based on reference 1)

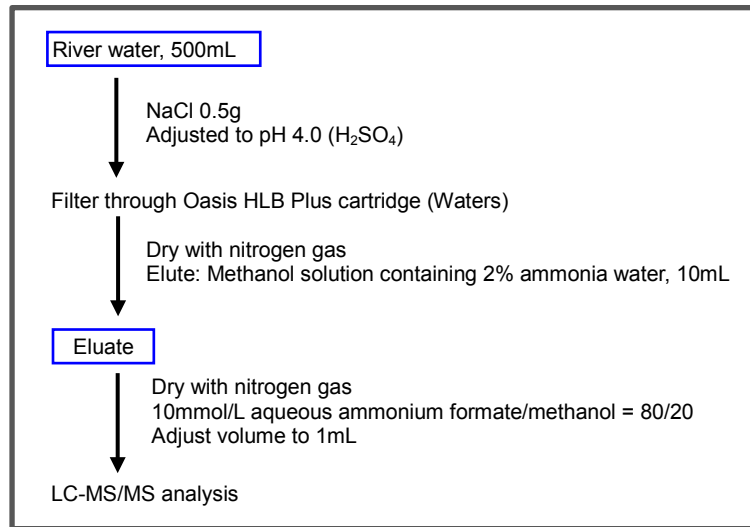


Figure 4. MRM chromatogram of river water (spiked with OC 5ng/L) treatment liquid

