

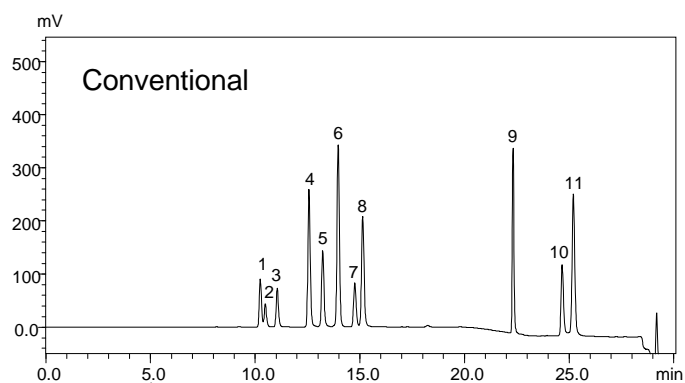
Nexera Application Data Sheet No.10

Ultra-High-Speed Analysis of Quinolone Antibacterial Agents

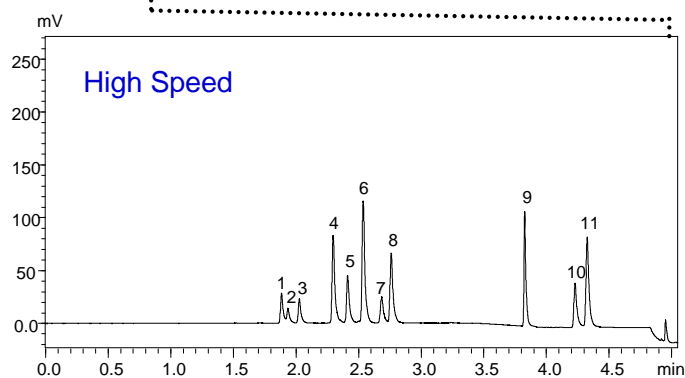
Quinolone antibacterial agents are widely used in livestock, poultry, and farmed fish to prevent and treat infectious diseases. Many types are available. Such simultaneous analysis of multiple components generally requires a long analysis time. However, the combination of a Shim-pack XR Series fast-analysis column and Nexera can significantly reduce the analysis time required. This Application Data Sheet introduces the ultra-high-speed simultaneous analysis of quinolone antibacterial agents using Nexera with an RF-20Axs high-sensitivity fluorescence detector.

Simultaneous Analysis of 11 Quinolone Antibacterial Agent Components

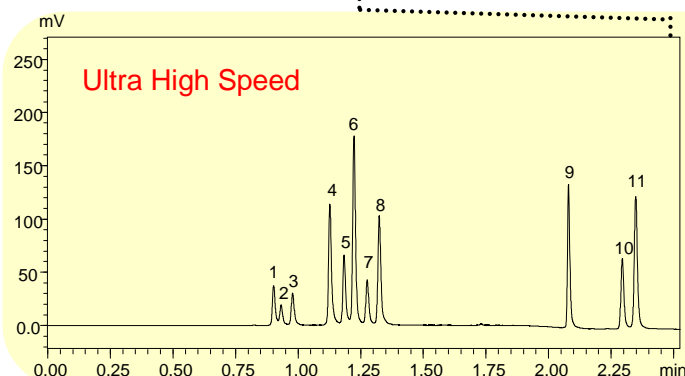
Simultaneous high-speed analysis was performed on 11 quinolone antibacterial agent components (each 1 mg/L) using a conventional column and two types of fast-analysis columns. The Shim-pack XR-ODS column with 2.2 μm particle size achieved approximately one-sixth the analysis time of a conventional column, whereas the Shim-pack XR-ODS III column with 1.6 μm particle size reduced the analysis time to approximately one-twelfth the analysis time of a conventional column. The cell temperature control function of the RF-20Axs detector ensures highly accurate analysis that is unaffected by the room temperature fluctuations.



Column : Shim-pack VP-ODS (150 mmL. x 4.6 mm I.D., 4.6 μm)
 Mobile Phase : A : 0.1% Formic acid in Water
 B : 0.1% Formic acid in Acetonitrile
 Gradient : B 3% (0 min)→15% (18 min)→35% (21-27 min)
 Flow Rate : 1.0 mL/min
 Column Temp. : 65 °C
 Injection Volume : 2 μL
 Detection : Fluorescence (RF-20Axs)
 Ex. 299 nm, Em. 455 nm (Peak 1-8)
 Ex. 325 nm, Em. 365 nm (Peak 9-11)
 Flow Cell : Conventional Cell
 Pressure : 4.2 MPa



Column : Shim-pack XR-ODS (75 mmL. x 3.0 mm I.D., 2.2 μm)
 Mobile Phase : A : 0.1% Formic acid in Water
 B : 0.1% Formic acid in Acetonitrile
 Gradient : B 3% (0 min)→15% (3 min)→35% (3.5-4.5 min)
 Flow Rate : 1.3 mL/min
 Column Temp. : 65 °C
 Injection Volume : 0.8 μL
 Detection : Fluorescence (RF-20Axs)
 Ex. 299 nm, Em. 455 nm (Peak 1-8)
 Ex. 325 nm, Em. 365 nm (Peak 9-11)
 Flow Cell : Semi-micro Cell
 Pressure : 28 MPa



Column : Shim-pack XR-ODS III (50 mmL. x 2.0 mm I.D., 1.6 μm)
 Mobile Phase : A : 0.1% Formic acid in Water
 B : 0.1% Formic acid in Acetonitrile
 Gradient : B 3% (0 min)→15% (1.5 min)→35% (1.75-2.25 min)
 Flow Rate : 0.8 mL/min
 Column Temp. : 65 °C
 Injection Volume : 0.4 μL
 Detection : Fluorescence (RF-20Axs)
 Ex. 299 nm, Em. 455 nm (Peak 1-8)
 Ex. 325 nm, Em. 365 nm (Peak 9-11)
 Flow Cell : Semi-micro Cell
 Pressure : 55 MPa

Peaks :

1. Norfloxacin, 2. Ofloxacin, 3. Ciprofloxacin, 4. Danofloxacin, 5. Enrofloxacin, 6. Orbifloxacin,
 7. Sarafloxacin, 8. Difloxacin, 9. Oxolinic acid, 10. Nalidixic acid, 11. Flumequine