

# Nexera Application Data Sheet No. 5

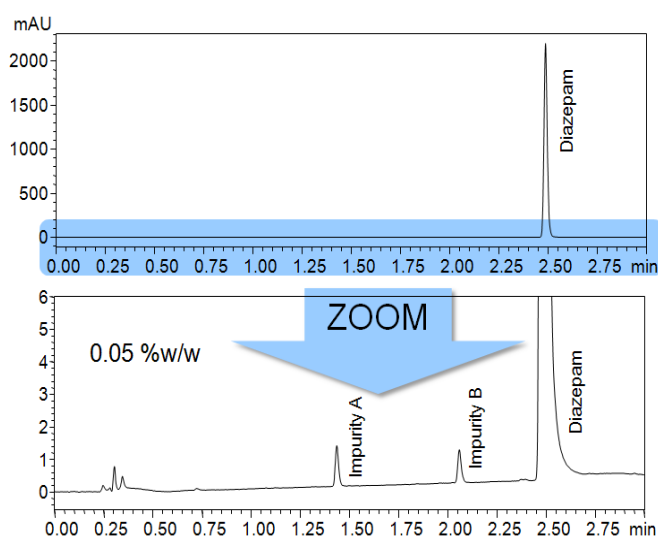
## Impurity Analysis by High-sensitivity UV Detector

Analysis of impurities can be a challenging task especially when the main ingredient needs to be assayed at the same time, which requires a wider dynamic range and lower baseline disturbances. With an extra wide dynamic range, temperature-controlled flow cell and a stray-light correction function, both SPD-20A UV and SPD-M20A Photo Diode Array detectors offer a high level of stability, sensitivity and linearity for a confident analysis. The 100 Hz sampling of the SPD-20A/M20A ensures peak information can be captured without loss of resolution and exploits the full potential of ultra-fast LC columns.

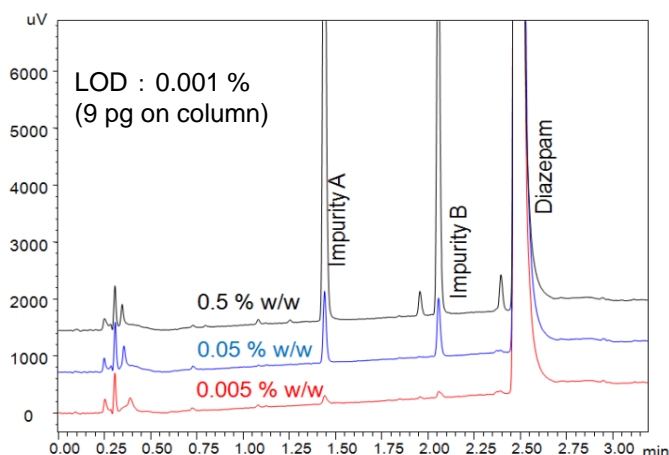
### Simultaneous detection of diazepam and impurities

In this example diazepam was used as the main compound, it was also spiked with other two compounds (impurities) 0.05% w/w relative to the main compound. The SPD-20A UV detector could detect the main compound and trace amount of impurities simultaneously.

Column : ODS (2.1 mm I.D. x 100 mm, 1.8  $\mu$ m)  
 Mobile Phase : A : Water  
                   B : Acetonitrile  
 Gradient : B 25%→40% (0.1 min)→70% (3.0 min)  
 Flow Rate : 0.8 mL/min  
 Column Temp. : 30 °C  
 Injection Volume : 6  $\mu$ L  
 Detection : UV 240 nm



As shown below the SPD-20A UV detector could detect the impurities 0.05 % relative to the main compound with good reproducibility.



### Repeatability of peak area, (% RSD, n=6)

	impurity content (%)		
	0.005 %	0.05%	0.5%
Impurity 1	2.22	0.73	0.16
Impurity 2	2.55	0.89	0.19