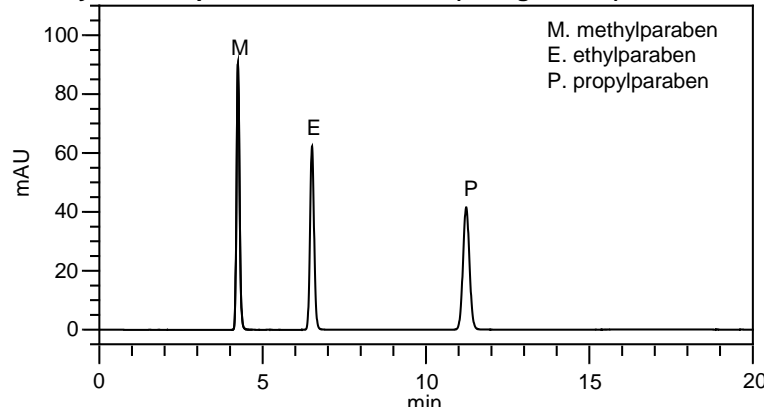


In the pharmaceutical field, the contents of any impurities in the drug substance or that in the drug product exceed 0.03 – 0.05% of the daily dosage (as the drug substance) need to be reported at the time of the application for a drug containing a new active ingredient. In the environmental field, the demand for the high-sensitivity analysis of trace residual substances is also on the increase.

The detector performance is an important factor to meet the requirement for this type of analysis. "Chromaster" 5430DAD, a liquid chromatography of Hitachi High-Technologies, realizes the low noise and low drift levels equivalent to those of UV detectors and allows high-sensitivity analyses.

A simultaneous analysis of components contained at high and trace concentration levels by using parabens as the model samples is introduced here. Propylparaben (600 mg/L) and ethylparaben (0.03 mg/L) were analyzed at the same time. The concentration ratio of the two components was (10000 : 0.5) and thus, the analysis model shown here is for the detection of a trace component contained at 0.005% of the concentration of the main component.

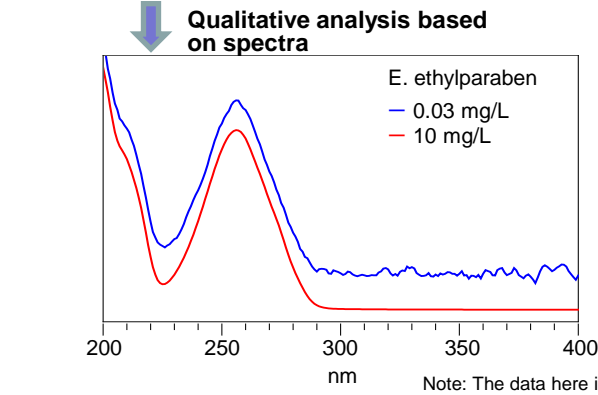
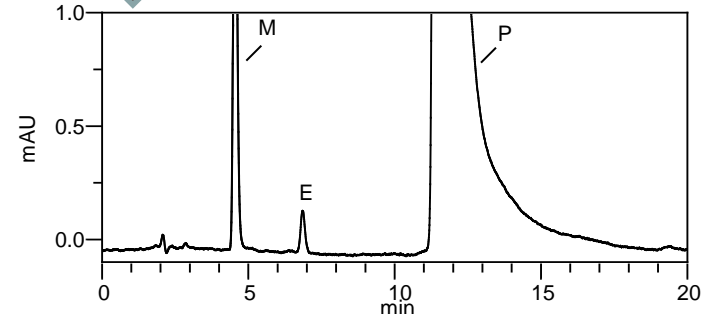
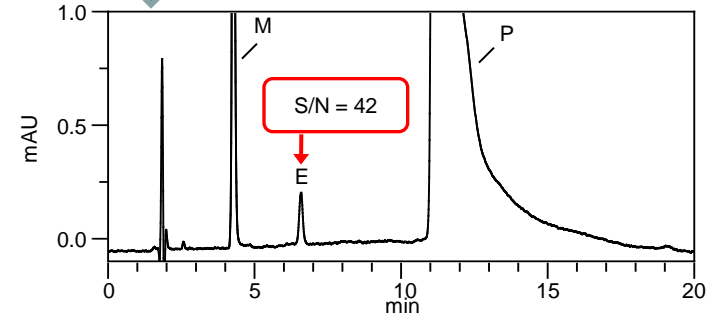
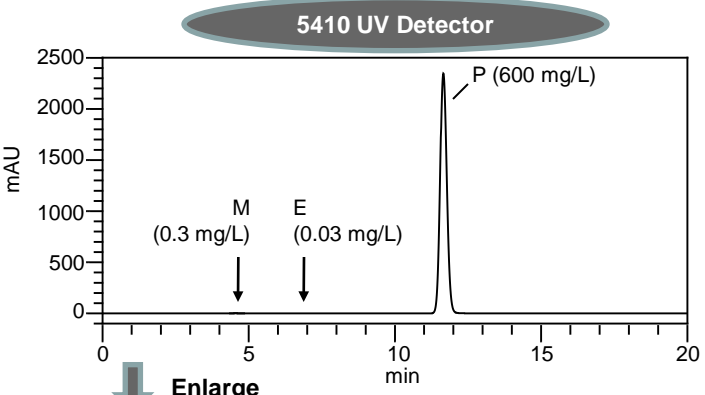
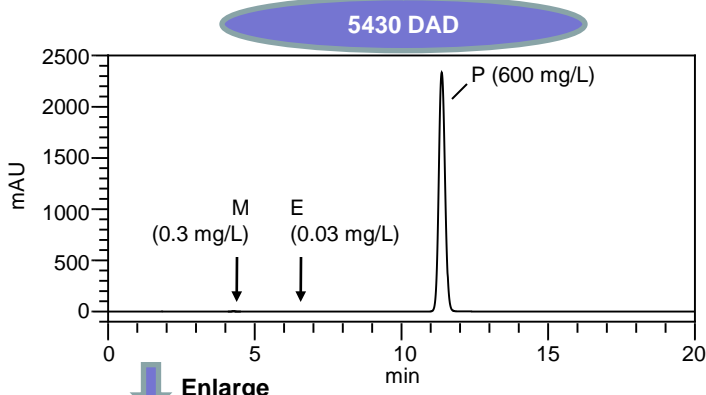
■ Analysis Example of Three Parabens (10 mg/L each)



<Analysis Conditions>

Column	: LaChrom C18 (5 μm) 4.6 mm I.D. × 150 mm
Eluent	: Water/Acetonitrile = 65 / 35 (v/v)
Flow rate	: 1.0 mL/min
Column temperature	: 40°C
Detection wavelength	: DAD 254 nm, UV 254 nm
Injection volume	: 10 μL

■ Analysis Examples for Three Parabens (Comparison Between DAD and UV Detector)



- Both 5430 DAD and 5410 UV detector showed a good linearity for propylparaben (0 – 600 mg/L) with the contribution ratio of 0.9992 and 0.9998, respectively.
- DAD realized the low noise level equivalent to that of UV detectors. As a result, the S/N = 42 was obtained for ethylparaben (0.03 mg/L) by DAD, indicating that the trace components (0.005%) and main component can be sufficiently assayed simultaneously.
- By comparing the spectra, the qualitative analysis for ethylparaben was also possible.

(As the analysis was performed by serially connecting the detectors in order of DAD-UV, the peak obtained by the UV detector is slightly low and broad.)

Main components of the instrument: Chromaster 5110 pump, 5210 autosampler, 5310 column oven, 5430 DAD, 5410 UV detector

Note: The data here is shown as an example of the analysis and does not warrant the performance of the instrument.