



Choosing the Right Detector

For Your Routine Quality Control and Compositional Food Testing Liquid Chromatography Applications.

ARC™ HPLC



DETECTORS

Common detectors for routine food testing by High Performance Liquid Chromatography (HPLC).

- 2489 Ultraviolet/Visible light (UV/Vis) Detector**

Due to their reliability and ease-of use, UV/Vis detectors are commonly used for several HPLC applications for routine food and beverage testing.
- 2998 Photodiode Array (PDA) Detector**

PDA detectors can provide some method troubleshooting capability, delivering information on peak purity and identity, through use of spectral analysis.
- 2414 Refractive Index (RI) Detector**

RI detectors are often used for the detection of components without UV chromophores, using simple isocratic liquid chromatography methods.
- 2424 Evaporative Light Scattering (ELS) Detector**

ELS Detectors (ELSD) offer near-universal detection of non-volatile and semi-volatile sample components. ELSD is compatible with both isocratic and gradient separations and has nebulizer options to cover a wide range of analytical and microbore flow rates.
- 2475 Fluorescence (FLR) Detector**

Fluorescence (FLR) Detectors offer high sensitivity for quantifying low concentrations of target compounds, whether naturally fluorescent or derivatized with a fluorescent tag.
- 3465 Electrochemical (EC) Detector**

Electrochemical Detectors are versatile and ideally suited for analyzing a wide range of compounds. A multiple flow-cell configuration combines working and reference electrode designs to minimize cost and enhance flexibility.
- ACQUITY™ QDa™ Mass Detector**

The use of Mass Spectrometry (MS) detection allows for increased selectivity and lower detection limits to be achieved, as well as the ability to obtain mass spectral information on sample components.

Click on each for more detailed information.

APPLICATIONS

Example food and beverage composition and quality control applications for each detector.

DETECTOR	EXAMPLE APPLICATIONS				
	AMINO ACIDS	ORGANIC ACIDS	SUGARS	SUGAR SUBSTITUTES	VITAMINS
UV-Vis/PDA Detector	✓	✓		✓	✓
RI Detector			✓	✓	
ELS Detector			✓	✓	
FLR Detector	✓				✓
EC Detector			✓		✓
ACQUITY QDa Mass Detector	✓	✓	✓	✓	✓

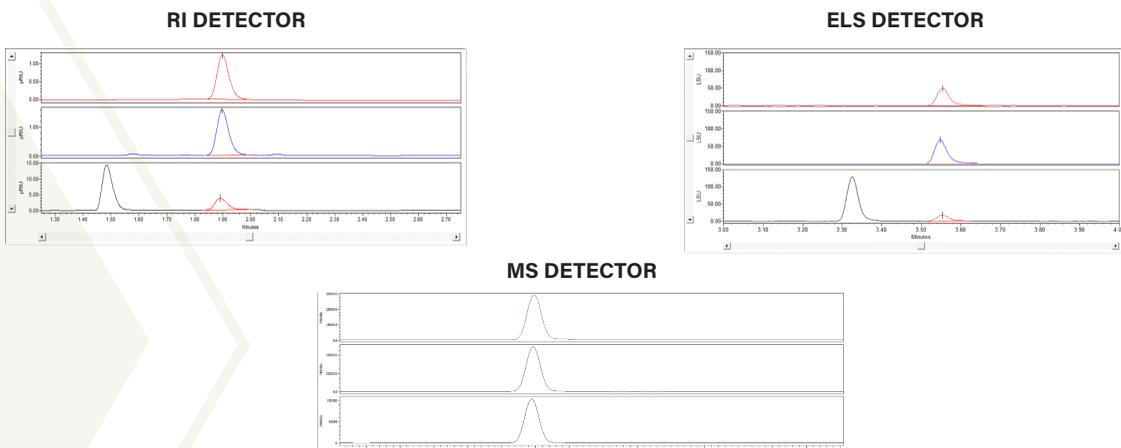
COMPOUNDS

Which detector should I choose for compounds with a weak or no chromophore?

DETECTOR	STRENGTHS	CONSIDERATIONS
2414 RI Detector	<ul style="list-style-type: none"> • Lower purchase and running costs • Simple isocratic methods with no need for re-equilibration between injections • Excellent linearity and precision 	<ul style="list-style-type: none"> • Not compatible with gradient methods • Limited selectivity and sensitivity
2424 ELS Detector	<ul style="list-style-type: none"> • Compatible with gradient methods • Near-universal detection of non-volatile and semi-volatile sample components, independent of pH • Mass response independent of analyte's optical properties 	<ul style="list-style-type: none"> • Requires clean nitrogen supply and removal • Can exhibit a non-linear response • Not compatible with non-volatile buffers
ACQUITY QDa Mass Detector	<ul style="list-style-type: none"> • Highest selectivity and sensitivity • Compatible with gradient methods • Mass confirmation data 	<ul style="list-style-type: none"> • Requires clean nitrogen supply and removal • Not compatible with non-volatile buffers • May require use of stable isotope labeled standards for quantification methods

CHROMATOGRAMS

Comparison of chromatograms for the determination of sucralose in energy drink samples by RID, ELSD and Mass Detection.



To find out more about detectors for HPLC visit: [Detectors for HPLC/UHPLC Systems](#)

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