



The Thermo Scientific Dionex Coulochem III
Electrochemical Detector

The Recognized Standard for
Electrochemical
Detection

Thermo
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Ideal for a Wide Range of Applications

The Dionex Coulochem™ III is the standard for electrochemical detection: no other HPLC detector has greater sensitivity, selectivity, and as wide a dynamic range.

With picogram to femtogram limits of detection, the Dionex Coulochem III detector is ideal for a wide range of applications including:

Neuroscience

Measure neurotransmitters from the smallest regions and with shorter collection times.

Pharmaceutical

From drug discovery to quality control, the inherent sensitivity and selectivity of this detector enables measurement of ultralow quantities of pharmaceuticals, their metabolites, and related substances.

Oxidative metabolism

Measure free radicals and antioxidants in living organisms and their harmful effect on cells. This detector is an ideal analytical tool to study the multifaceted pathways involved in damage and protective mechanisms.

Food & beverage

Analyze low levels of flavonoids, phenolics, antioxidants, vitamins, and sugars. The detector provides a competitive advantage by profiling the characteristic qualities of products, their nutrient levels and evaluating competitors' products.

Clinical diagnostic and research

A number of important markers for cancer, cardiovascular disease, and osteoporosis are readily measured in serum, plasma, or urine with the Dionex Coulochem detector.

Chemical & general purpose

Any laboratory can benefit from using electrochemical detection where measuring analytes with extreme sensitivity and selectivity are required.

Electrochemistry with Mass Spectrometry

Get more from MS by coupling with electrochemistry.



The Dionex Coulochem III detector delivers:

- Sensitivity
- Selectivity
- Flexibility
- Reliable, trouble-free operation

The Dionex Coulochem III detector provides performance and reliability, is convenient to use, and comes with a choice of cells optimized for the application. The Dionex Coulochem III detector is easy to learn, easy to operate, and easy to maintain.

Sensitivity

Electrochemical detection (ECD) is typically chosen for its extreme sensitivity; and no electrochemical detector is more sensitive than the Dionex Coulochem III.

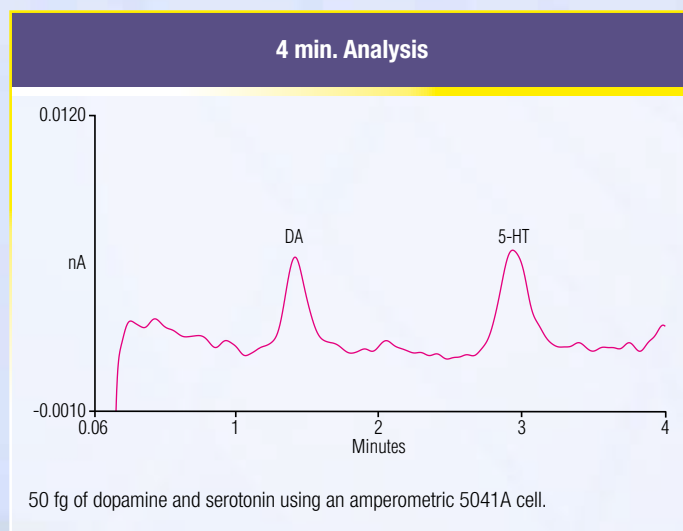
Electrochemical detection is sensitive because it measures the very small currents produced when low levels of compounds undergo redox reactions.

Amperometric cells typically measure 5-10% of the analyte. Coulometric cells with their high efficiency measure close to 100% of the analyte, thus increasing sensitivity.

Both amperometric and coulometric cells are available for use with the Dionex Coulochem III detector. Each cell type produces the highest sensitivity available today. From analysis with amperometric cells—where sample volume is limited—to the ultimate in concentration sensitivity with coulometric cells.

The detector independently controls multiple channels: two for analyses, and an additional channel—unique to the Dionex Coulochem III—for mobile phase cleaning or sample pretreatment.

The sensitive Boron Doped Diamond electrode extends the range of compounds typically measured using glassy carbon electrodes.

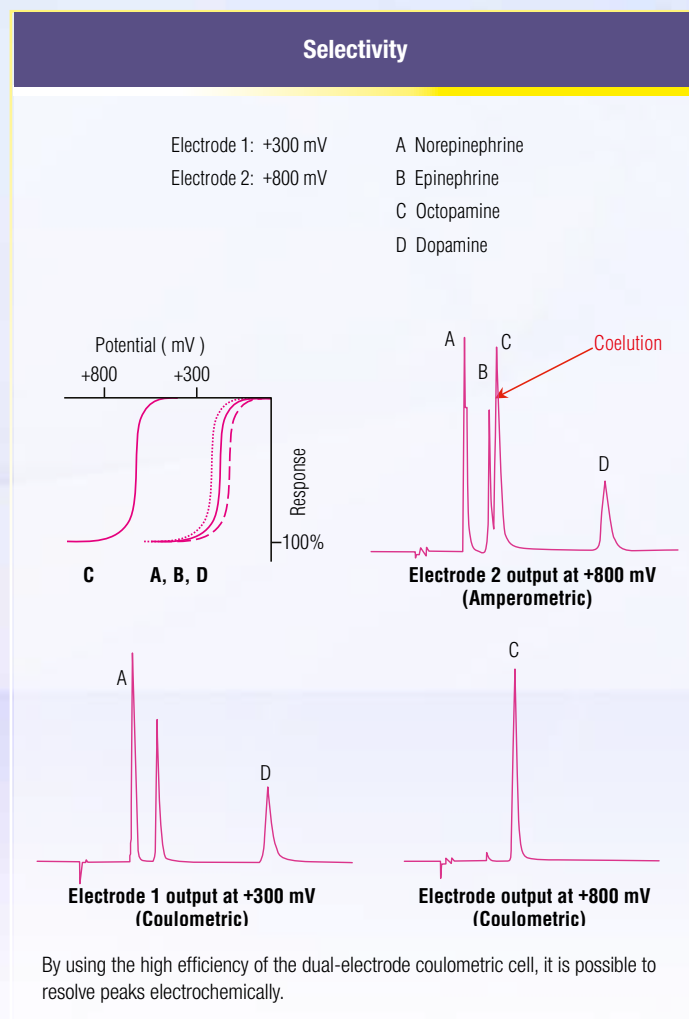


The Dionex Coulochem III detector gives you the sensitivity to peer into the living brain, view the mechanisms of aging and cancer, or create a picture of health and disease.

Selectivity

Often, the analytical chemist is faced with co-eluting analytes. The unique selectivity of the coulometric cell enables resolution of co-eluting peaks. In coulometric detection, compound A reacts completely at Electrode 1, thus eliminating it from detection at Electrode 2. Compound B passes Electrode 1 unchanged and is detected at Electrode 2. As a result, A and B are resolved electrochemically. This lets you operate in redox or screen mode, providing greater selectivity—often reducing sample preparation and eliminating interferences.

The Dionex Coulochem III detector offers DC, Pulse/Scan, or both as separate modules in the same detector. Optimized for the low signal measured in DC mode, the detector achieves the highest possible sensitivity from capillary to standard bore chromatography. Pulse mode supports variable timing of potentials and duration of waveforms to optimize the application. Scan mode helps select the optimal potentials.



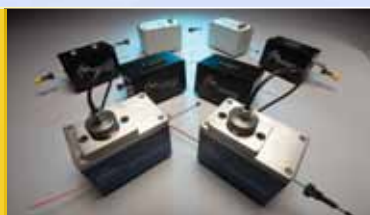
Pulse mode offers another level of selectivity when using amperometric cells. Here, the potential is continuously changed; you can select potential and duration of up to 4 segments. This is the preferred method for determination of carbohydrates.

Flexibility

The Dionex Coulochem III detector provides optimized solutions that give you flexibility in experimental design, instrument configuration, and cell options, now and for the future.

Choice of cells

The Dionex Coulochem III detector comes with a choice of cell designs and electrode materials. All have a solid-state, maintenance-free reference electrode known worldwide for its reliability. Coulometric, amperometric, or specialty cells—all used with the same detector.



Organizer Module

An optional organizer module houses multiple columns and cells, protecting them from the environment. It is available in heated or ambient temperature versions.



DC Or Pulse: You Choose Without Compromise

Other electrochemical detector designs place high-sensitivity DC and pulse on the same components. This requires a compromise in the electronics for these disparate modes of operation. In this detector, DC and pulse are on separate boards, optimizing the electronics for each mode. There is no requirement to purchase functions that will not be used.

HPLC or UHPLC:

The Dionex Coulochem III detector is ready for UHPLC without any modification. Cells optimized for UHPLC or microbore are also available.

Turnkey HPLC Solution

The UltiMate™ 3000 system is optimized for the Coulochem™ III detector. The robustness and reliability of the system offers you the confidence and capability to achieve ultra sensitive results and maximum performance with minimum effort and downtime.

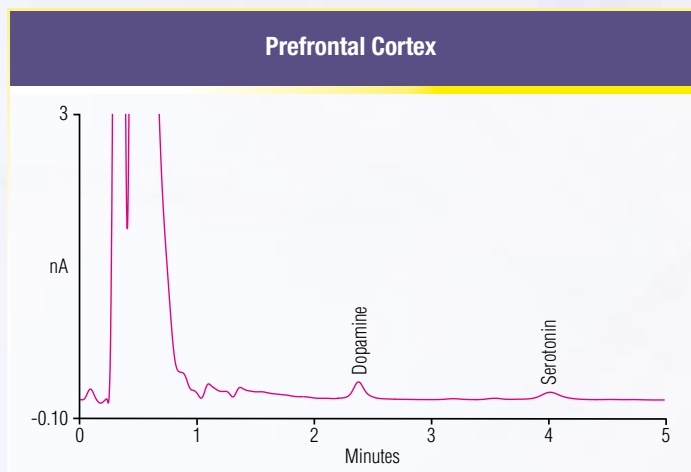


Sensitivity, Selectivity, Reliability, and Flexibility

All In One Detector

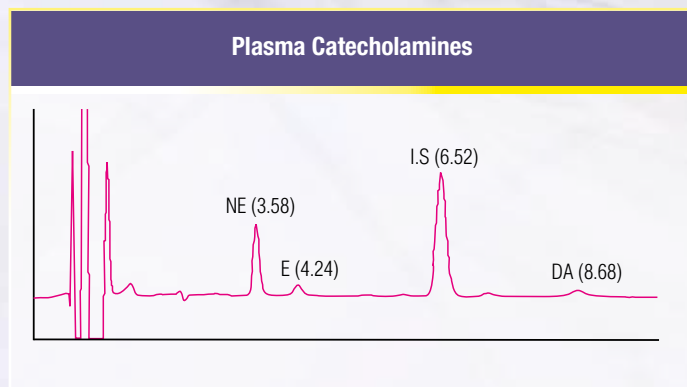
Maximize Sensitivity: Neurotransmitters

Faster analysis enables shorter collection times and improved temporal resolution in microdialysis experiments. Extensive research by our Applications Laboratory has determined that the ideal configuration for sensitivity and reliability is the Model 5041A cell with a 2 mm column.



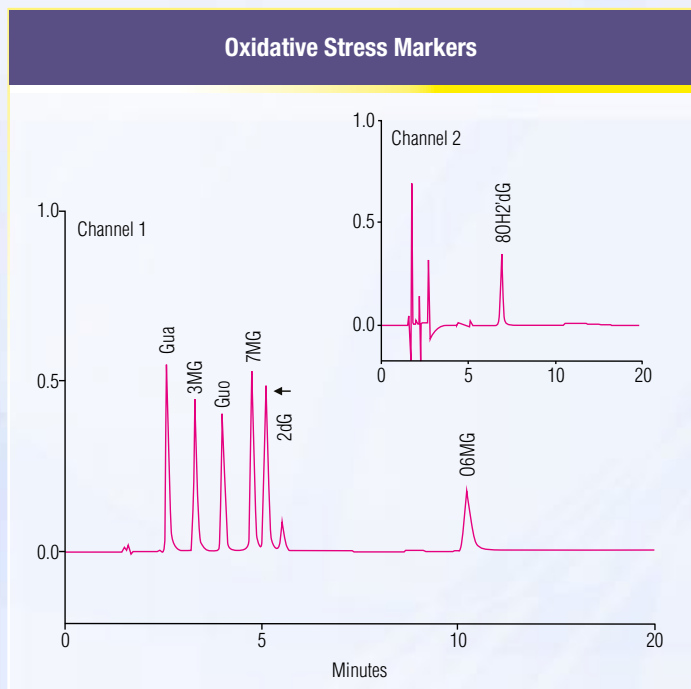
Enhance Selectivity with Redox Mode: Plasma Catecholamines

High selectivity and sensitivity can be achieved through the dual working electrodes of the coulometric cells. In plasma catecholamine analysis, the components are oxidized at the first electrode and measured reductively at the second, eliminating many common interferences.



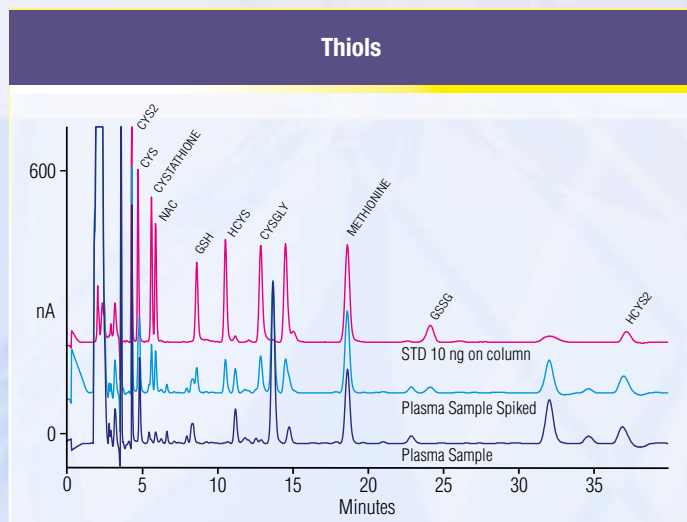
Dual Channel Detection: Oxidative Stress Markers

The dual-electrode capability of the Dionex Coulochem III detector allows fine tuning for specific analytes. With guanine adducts you can measure both guanine and the oxidative adduct simultaneously, without the vagaries added with multiple detector types.



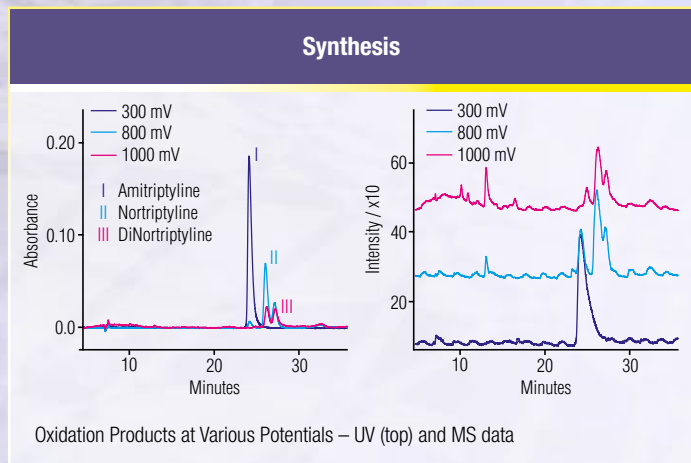
Widen the Range of Analytes: Thiols

Problem analytes, (e.g. glutathione) can be measured reliably using the Boron Doped Diamond electrode. This electrode has a wide potential window, even with aqueous mobile phases, thus widening the range of molecules analyzed by ECD.



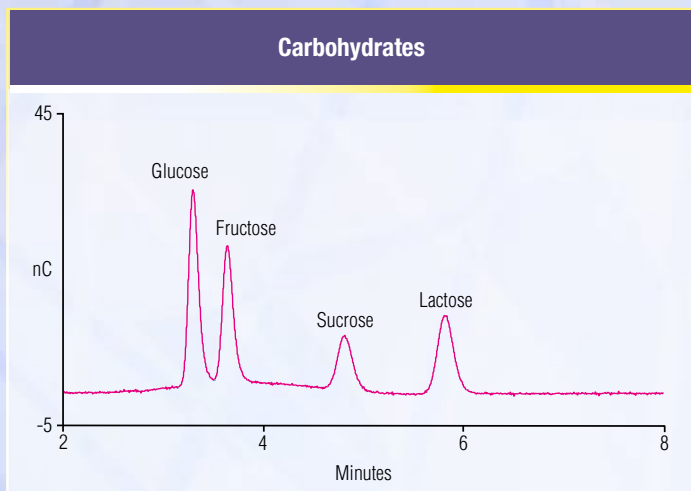
Synthesis: Drug Metabolites

Synthesize authentic drug metabolites in hours instead of months, in quantities suitable for NMR, MS, or biological studies. Connect on-line with MS or go off-line to collect metabolites in microgram quantities.



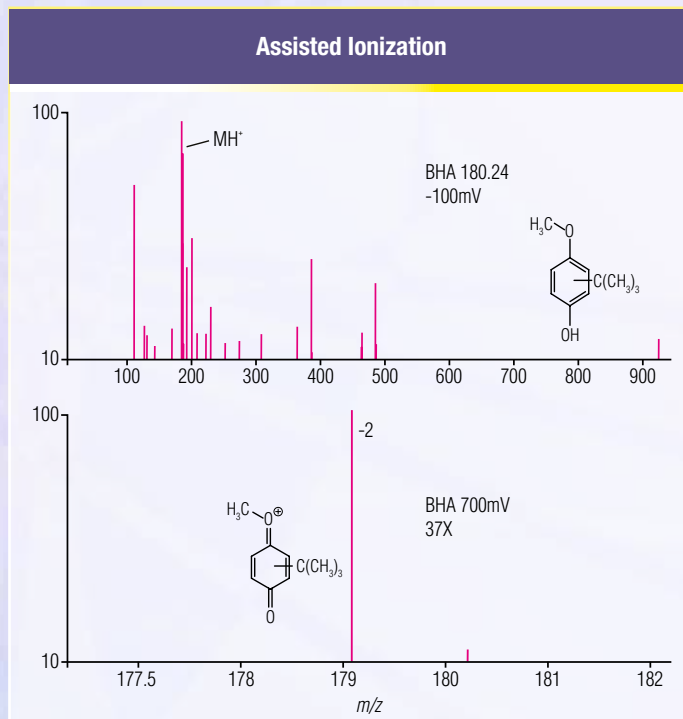
Pulsed Amperometric Detection: Carbohydrates

Pulsed amperometric detection (PAD) is a highly selective and sensitive method for the detection of sugars. The unique solid-state reference of the cells lets you run pH as well as salt gradients.



Electrochemistry with Mass Spectrometry: Assisted Ionization

Use the coulometric cell to provide additional capabilities with your LC-MS system. Ionize problem compounds to enable or enhance MS detectability. Use this approach to identify parent compounds and reaction products or metabolites.



The Value of Support and Service

Customer care begins after delivery—when you purchase any Thermo Scientific Dionex instrument, module, or system, you get a partner, not just a piece of equipment. We provide access to a wide range of quality post-installation programs and assistance; including expert customer training, comprehensive service agreements, validation and qualification services, application support, and timely, professional service by skilled, locally based representatives. Our service representatives are distributed around the world, but close to you, ready to provide professional assistance, whether you're a new customer or a longtime partner. Your success equals our success.



Thermo Scientific Dionex products are designed, developed, and manufactured under an ISO 9001 Quality System.

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