

UHPLC

Elute PLUS LC series

Simply more for your
MS analysis

Innovation with Integrity

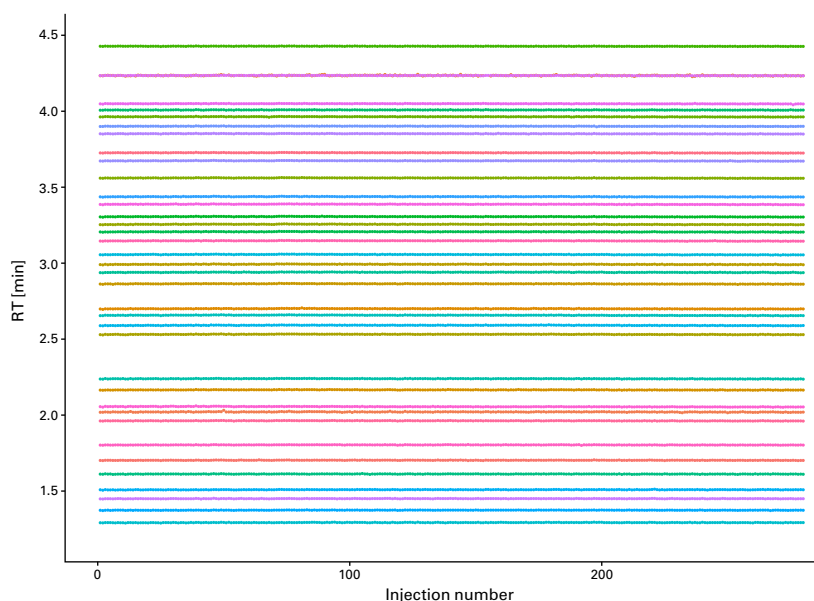
Robustness, stability and speed for any MS application

The Elute PLUS series has been improved to give you the best retention time stability and peak shape, as well as full robustness when switching methods and solvents, successfully enhancing high-throughput analysis.

Perfect retention time stability

250 consecutive runs of Pesticide Mix in solvent with fast UHPLC gradient.

The method has a flow gradient from 0.5 up to 0.7 mL/min. Within 3.8 minutes the %B rises from 4 to 99% methanol.



Flexible portfolio for broad range of applications

Elute PLUS systems are optimized to match the analytical requirements of your applications.

- The Elute PLUS UHPLC for ultra-fast and reliable separation for small molecule quantitation
- The Elute PLUS HT system combines ultrahigh analytical performance and high-throughput capabilities, thanks to the fully integrated PAL 3 autosampler
- The Elute PLUS OLE UHPLC combines online extraction for pre-enrichment and ultrafast separation.
- The Elute PLUS HT system with SampleStream is a biopharma application suitable for online molecular weight cut-off for large biomolecules (available for US only!)



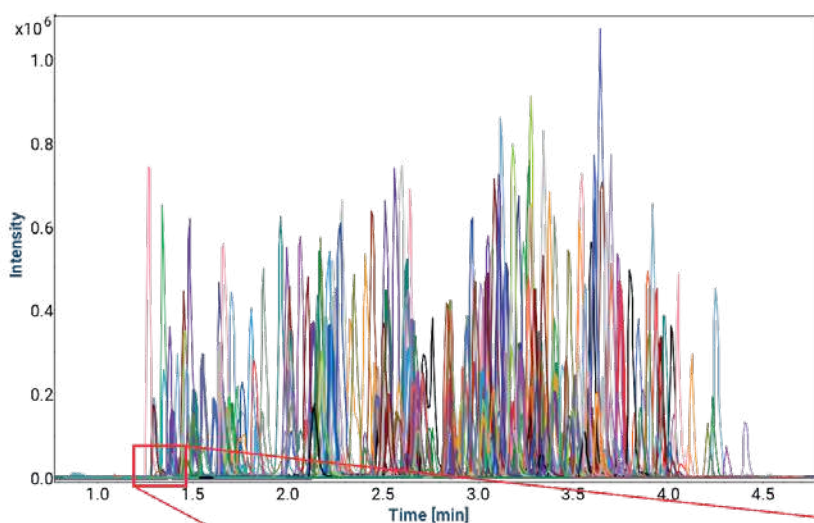
TargetScreener:

One workflow – all the answers

Bringing the full power of exact mass analyses to multiplexed laboratory screening and quantitation demands, this comprehensive analytical workflow is ready to work out of the box and includes a mass spectrometer, the Elute PLUS UHPLC, the software TASQ®, a database containing over 3,000 entries and curated default methods.

Best Performance

The Elute PLUS UHPLC allows analysis of 294 pesticides in wheat using a short gradient resulting in precise and reproducible separations and narrow peak widths.

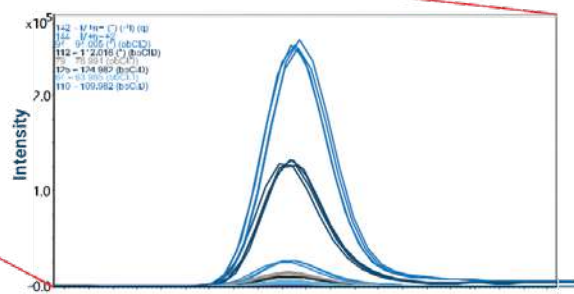


Quantitation of 294 pesticides in wheat matrix with a 5 min method

The pesticides were spiked in three different concentrations: 5, 10 and 20 µg/kg resulting in an analyzed concentration of 1.25, 2.5 and 5 ng/mL. The analysis was evaluated with the software TASQ.

Robustness chromatography

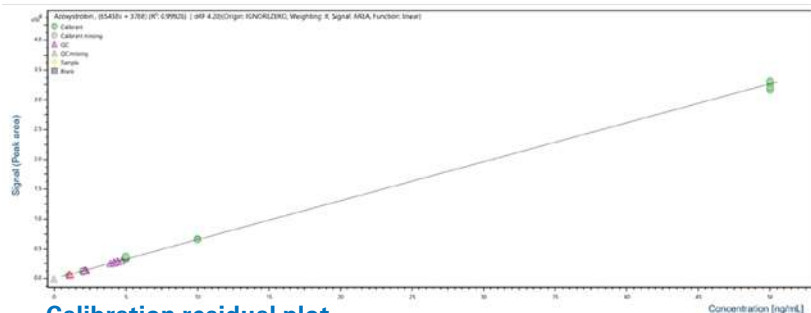
Overlay of extracted ion chromatograms of the pesticide Methamidophos in different injections and concentrations.



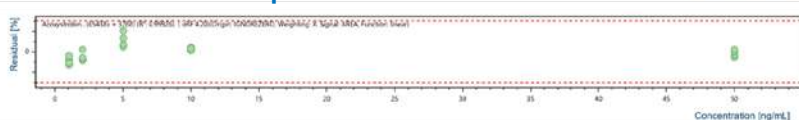
In combination with a qTOF mass spectrometer, the Elute PLUS UHPLC achieved reliable performance for the analysis of complex data sets.

Here, the data was evaluated using Bruker's target screening and quantitation software TASQ and compared to the SANTE Guideline 11312/2021 for pesticides.

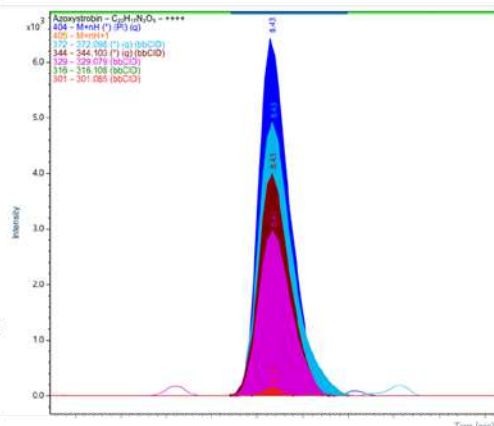
Calibration function graph



Calibration residual plot

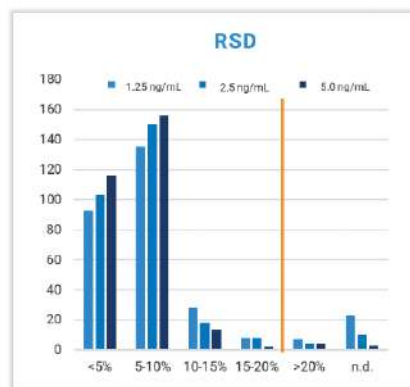
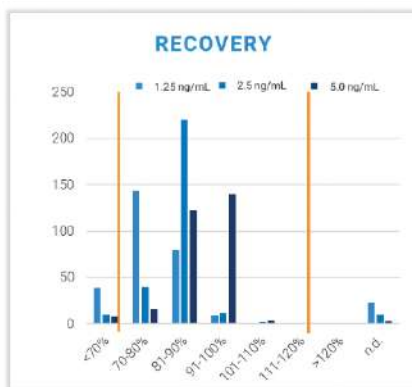
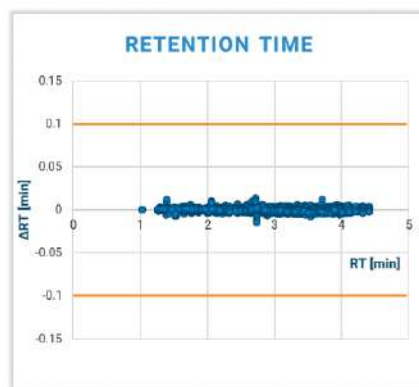


Chromatogram



Quantitation overview in TASQ

Shown is the calibration function graph of Azoxystrobin with $R^2 = 0.9993$, the calibration residual plot and the chromatogram.



A validation study shows that >95% of the analytes have a mass accuracy within tolerance, and Retention Time (RT), recovery, and RSD are all compliant with SANTE Guideline 11312/2021 for pesticides.

- Best performance in complex matrices
- Best reproducibility in RT and peak shape

§ SANTE Guideline 11312/2021

- RT tolerance (standard sample): ± 0.1 min
- Two ions with mass accuracy ≤ 5 ppm (or = 1 mDa below 200 m/z)
- $S/N \geq 3$ or signal should be present in at least 5 subsequent scans
- Fully overlap of precursor and product ion

Absolute food authenticity

Elute PLUS UHPLC coupled to timsTOF Pro 2 enables the implementation of both targeted and untargeted metabolomics in complex food matrices, such as Extra Virgin Olive Oil (EVOO).

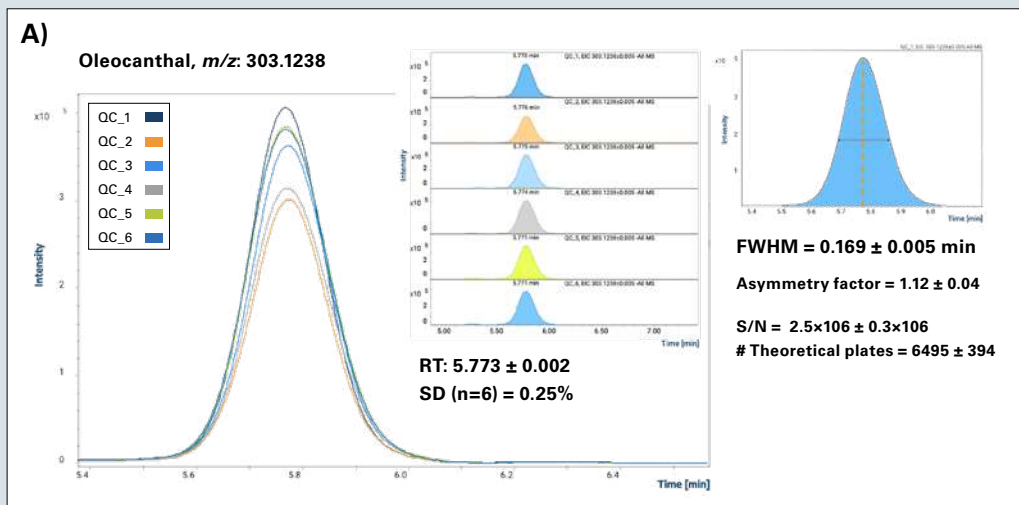
Targeted analysis focuses on the determination of bioactive compounds occurring in EVOOs, directly linked to EU health claim 432/2012 and defined as hydroxytyrosol derivatives.

The system's high reproducibility, evaluated for Oleocanthal in terms of chromatographic separation ($RT = 5.80 \pm 0.01$ min) in combination with the narrow peak widths ($FWHM = 0.169 \pm 0.005$ min), enables reliable identification and application to further quantification purposes.



Regulation (EU) No 432/2012: Permitted health claims

EVOOs, rich in polyphenols compounds, (Hydroxytyrosol and its derivatives) protect LDL cholesterol from oxidation, maintaining high HDL levels and protecting from cardiovascular diseases.

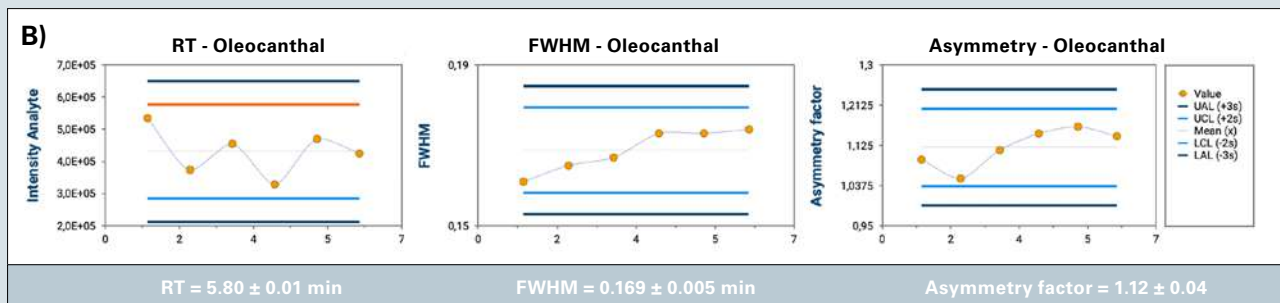


LC-TIMS-HRMS analysis of 6 Quality Control (QC) samples prepared from olive oil matrix**.

A) Analytical performance of the bioactive compound Oleocanthal, found in high-concentration levels in olive oil.

B) Chromatographic parameters evaluated for Oleocanthal within an analytical batch.

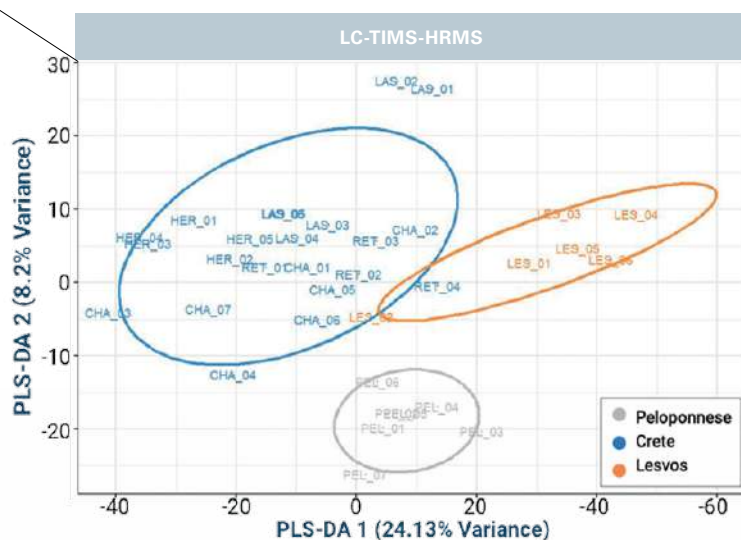
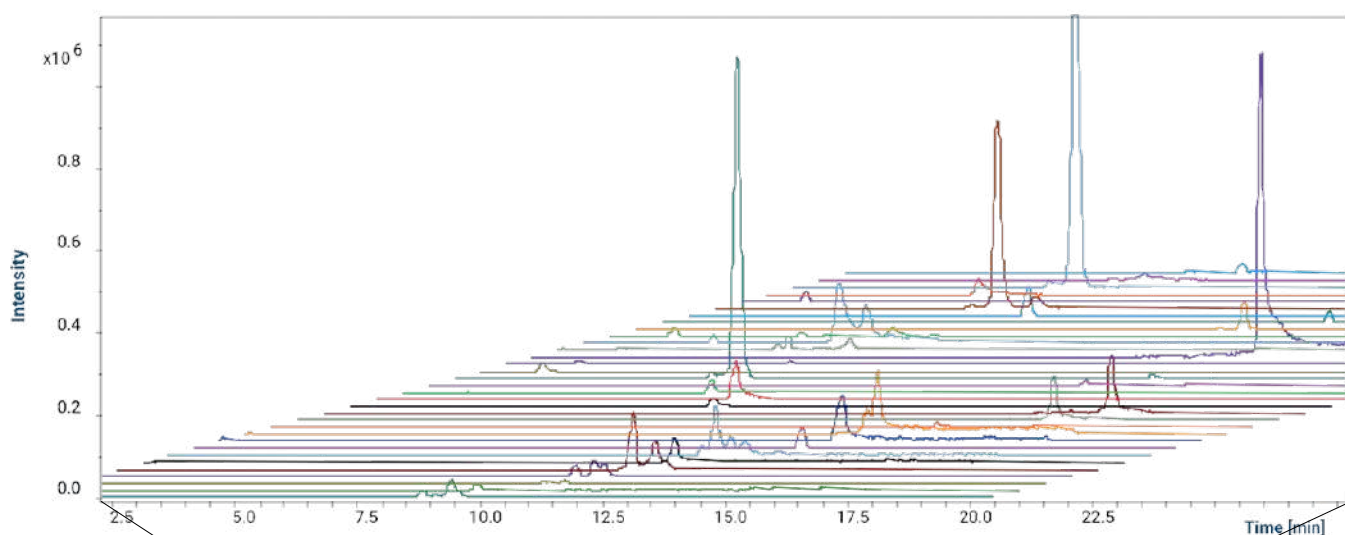
Analysis was performed in DataAnalysis 6.0



** Samples and measurements kindly provided by Sofia K. Drakopoulou, Anastasia S. Kritikou, Ilias F. Tzavellas and Nikolaos S. Thomaidis
Laboratory of Analytical Chemistry, National and Kapodistrian University of Athens, Greece

Comprehensive metabolomics coverage

In olive oil samples, >40 analytes from 5 different chemical classes (flavonoids, triterpenoids, secoiridoids, fatty acids & conjugates, phenols, & derivatives) were successfully separated with the Elute PLUS UHPLC, afterwards using an in-house target database for identification. Relying on the system's high analytical performance, a more holistic approach can be employed, taking into account EVOOs' total profile, achieving adequate discrimination in terms of authenticity assessment.



Wide- scope target screening in EVOO samples**.

More than 40 analytes were detected from 5 different major classes. EVOO samples were subjected to discrimination study based on geographical origin, using a supervised PLS-DA model.

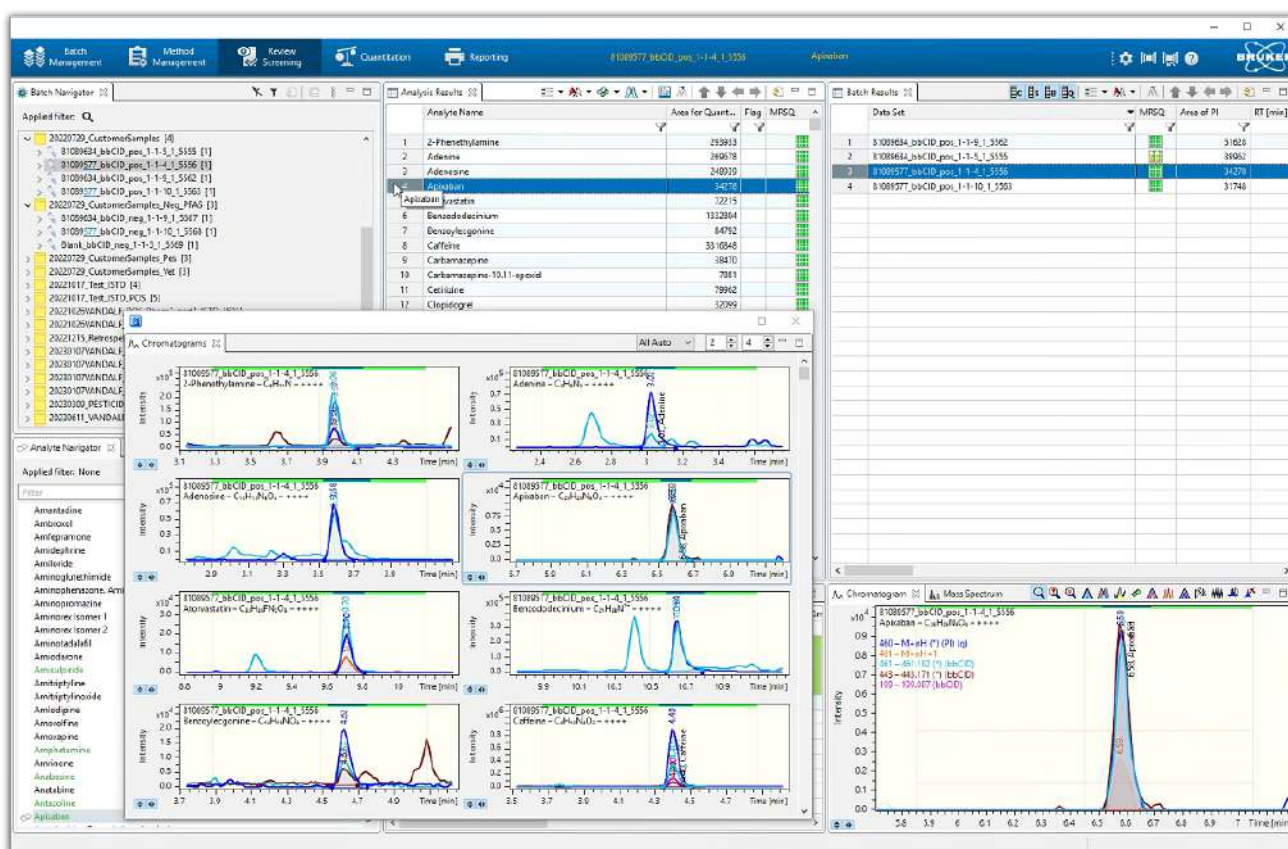
Reliable detection of micropollutants

The release of micropollutants from WasteWater Treatment Plants (WWTPs) are of increasing concern. More than a >100,000 chemicals have been or are in use in the world today and the number is constantly growing. Many of these chemicals can potentially end up in wastewater. One limitation so far, has been the limited number of micropollutants included in target screening approaches.

The combination of the Elute PLUS HT system, combined with the Bruker impact II VIP with the TASQ setup makes it possible to screen for hundreds of micropollutants in a single run and the high sensitivity of the instrument means that only very limited sample preparation is

necessary. The limited sample preparation makes it possible to keep the cost down and screen a higher number of wastewater samples and minimize the risk of losing micropollutants during sample clean-up. The VIP-HESI source has been shown to be very robust allowing with >100s of wastewater injections without decrease in performance.

The TASQ software allows rapid screening through many samples and micropollutants at the same time. With it is possible to reduce the time required for data treatment.



Quick screening of micropollutants with TASQ software

Example for screening of many samples and micropollutants in wastewater at the same time.***

***Samples and measurements are kindly provided by Kristoffer Kilpinen, Development chemist, Eurofins Environment, Denmark.

High-throughput biotherapeutics analysis

The Elute PLUS HT SampleStream system which is an online Molecular Weight Cut-Off (MWCO) system rapidly concentrates large volumes of dilute solutions, providing buffer exchange for any molecules retained by the MWCO filter, including proteins and oligonucleotides.

The platform can operate in online, fraction collection, and direct infusion modes with the same hardware – changing modes is made easy within the software. SampleStream can also be used to prepare samples for downstream analysis by re-injecting concentrated and buffer exchanged samples onto an LC column and is compatible with other various analysis techniques.

SampleStream platform:

- Sample preparation including desalting, buffer exchange and fraction collection
- LC separation

For further information:

AppNote LCMS 198
SampleStream is available for US only



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