SPOTLIGHT feature

Drug Discovery, Pharmaceuticals & Cannabis Testing

# Automated extraction of metabolites from plant tissue samples: A case study for THCA and terpenoids from cannabis flowers

Tecan

Tecan's experience in mass spectrometry and chromatography sample preparation spans from innovative instruments to consumables products to a deep understanding of required applications. Whether you need to extract THC and THC metabolites through liquid-liquid extraction (LLE), supported liquid extraction (SLE), or solid phase extraction (SPE), Tecan has the right automation solution for you.

The Resolvex® standalone instrument portfolio helps low- to mid-throughput laboratories easily with SLE and SPE. Compatible with many products of different vendors, Tecan also offers its own selection of SLE and SPE materials.

For full automation, Tecan`s flagship liquid handling platform Fluent® supports GLP-, GMP- or IVDR-validated workflows. With recent enhancements, including the Phase Separator for fully automated LLE, and the Resolvex i300 for SPE in 96-well and 1ml, 3ml, 6ml columns, Fluent is the ideal instrument for forensics applications involving drug analysis.

Tecan presents one of its most recent developments in the Resolvex® instrument series: the Resolvex® Prep, specifically designed for extraction workflows such as the extraction of tetrahydrocannabinolic acid (THCA) and terpenoids from cannabis flowers. This instrument provides a fully automated, end-to-end solution for sample preparation in chromatography and mass spectrometry, tailored for low- and medium-throughput laboratories.

The Resolvex Prep is built around the principles of simplicity in operation, heightened flexibility and unrivalled precision and accuracy, making it an essential tool for advancing laboratory workflows.

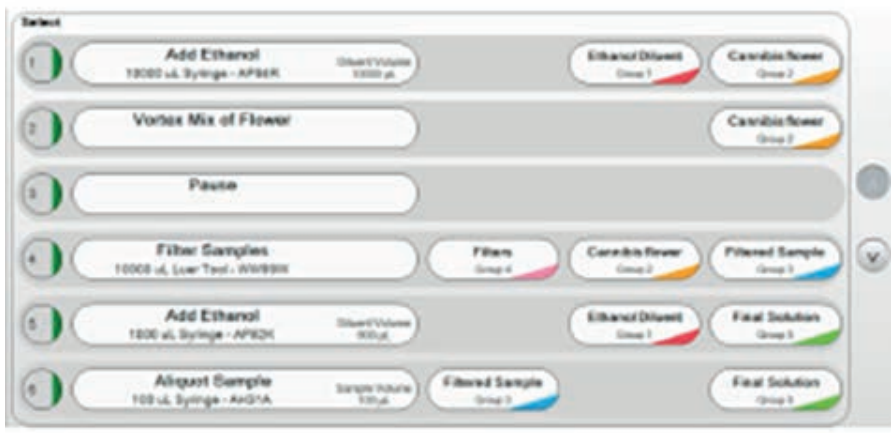
## Simplicity in operation

The Resolvex Prep can be operational in less than an hour, thanks to its intuitive interface and automated calibration procedures. The smart software allows users to quickly create new workflows using a drag-and-drop function to select required hardware such as syringes, vials, and racks. Predefined coordinates further minimise setup time, enabling researchers to focus on their work with minimal delays.

Using a validated manual extraction and filtration procedure, the Resolvex Prep automates the following liquid handling steps, including extraction, filtration, and aliquoting into final vials, starting with 0.5 g of pre-weighed cannabis flowers in a 20 mL EPA enviro vial:

- Add 10 mL of ethanol (96%)
- Vortex for 10 minutes at 510 rpm
- Pause for 2 minutes to allow the cannabis flowers to settle
- Take 2 mL of supernatant and filter through a 0.2 µm syringe filter into intermediate vials
- Prepare final autosampler vials by aliquoting 900 µL of ethanol
- Add 100 µL of the supernatant filtrate to the prepared final autosampler vials

The entire autosampler rack is then seamlessly transferred for analysis.




## Heightened flexibility

The Resolvex Prep features a modular deck layout that accommodates common laboratory sample and autosampler racks (Agilent®, Waters®, Shimadzu®, CTC®, EST®, Hitachi®), solvent reservoirs, and labware in interchangeable positions. Using radio-frequency identification (RFID), the instrument automatically identifies deck segments, while proximity sensors detect the presence or absence of labware.

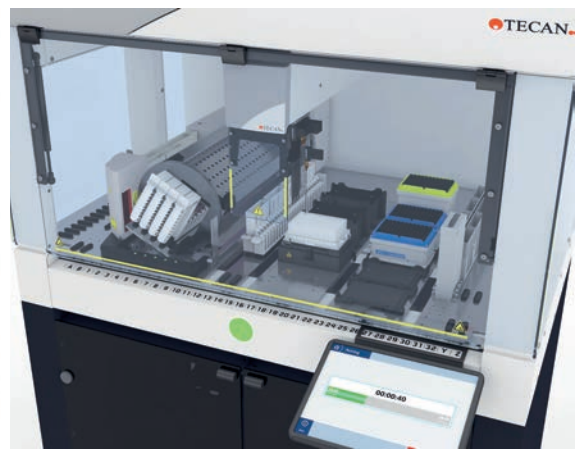
The patented rotating foot provides operational advantages, enabling automated tool changes for analytical syringes, SPE cartridges, µSPEed syringes, syringe disc filters, controlled piercing of septa-sealed vials, as well as precise aspirating and dispensing. Its capabilities are further enhanced by features such as a wash station, an optional large volume dispenser, and an optional direct injection port.

## Unrivalled precision and accuracy

The Resolvex Prep uses analytical syringes ranging from 10 µL to 10 mL to ensure exceptional reliability and accuracy in sample preparation. With 12 different syringes and tools available, users can tailor their workflows to meet specific requirements. The automated tool change system enables seamless transitions, empowering users with maximum flexibility.

The automated extraction process demonstrated excellent performance, yielding 25.4% total THCA at a 99.1% recovery rate and a 97.5% recovery rate for terpenoids, comparable to a GMP-validated manual protocol.

Capable of handling batch sizes from 5 to 50 samples with consistent efficiency and accuracy, the Resolvex Prep completes Tecan's portfolio for sample preparation in mass spectrometry and chromatography for smaller laboratories.



## Automated liquid handling: The key to accurate and reproducible results

Liquid handling is one of the most important, yet tedious tasks in an analytical laboratory. Results need to accurate and reproducible, but this can only happen when correct volumes of sample or solvent are used. Unfortunately, with each manually prepared sample or solution, the risk for falsified results increases.

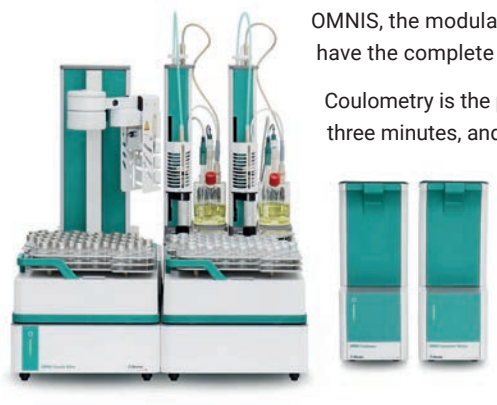
Liquid handling is used to transport a solution or reagent accurately, and precisely from one place to another. Automated liquid handling utilises piston-driven burettes to perform this job unlike manual methods that require graduated cylinders, glass burettes, or pipets etc to manipulate liquids.

If you're still working manually with pipets, glass burettes, and other kinds of measuring cylinders in your lab, consider automation for your liquid handling processes. Electronic burettes can do more than just a simple liquid transfer. Accuracy, precision, and cost-efficiency are only some of the benefits of switching to using automated liquid handling in the laboratory.

**More information online: ilmt.co/PL/9kdR**

For More Info, email: 63955pr@reply-direct.com

## OMNIS Coulometer and Sample Robot Oven



OMNIS, the modular platform for chemical analysis from Metrohm has become ever more powerful. With the launch of the OMNIS Coulometer, users of OMNIS now have the complete scope of titration methods at their disposal.

Coulometry is the preferred method for trace-level determination of moisture in liquid, solid, and gaseous matrices. It is simple to use, results are available in less than three minutes, and as coulometry is an absolute method, a titre determination is not required.

The OMNIS Coulometer offers maximum flexibility: if the sample volume increases, users can add another OMNIS Coulometer module. Adding an OMNIS Dosing Module to the OMNIS Coulometer eliminates the risk of exposure to the KF reagent enabling the fully automated exchange of exhausted reagent.

Together with the OMNIS Coulometer, Metrohm launches the OMNIS Sample Robot Oven for gas extraction. Gas extraction enables moisture determination in matrices that cannot be analysed directly in the titration cell. The OMNIS Sample Robot Oven can be fitted with one or two Oven Modules for maximum flexibility and increased performance. A maximum of 100 samples in standard vials with a volume of 6 mL can be analysed for moisture content completely unattended.

**More information online: ilmt.co/PL/O36N**

For More Info, email: 63953PR@reply-direct.com