Sales Primer

intelligent sample preparation

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ePrep Sales Primer – Cannabis Application

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KEY APPLICATIONS DETAILS

- Fully automated extraction and filtering method to determine potency of cannabinoids and terpenoids in cannabis flowers
- Unattended sample preparation – reduction in staff resources
- Extraction efficiency better than 99%
- Easily adaptable method with varying sample numbers
- Ready-to-go method requiring minimal staff training

WHY A CUSTOMER WOULD BE EXCITED ABOUT EPREP

The ePrep is a unique, off-instrument chromatography sample preparation robot. This allows incredible versatility – working standards can be prepared for the GC-MS, water samples can be filtered ready to go for ion chromatography, hydrophobic contaminants can be removed from your sample with µSPE ready for the LC-MS

- The ePrep can prepare the final vials in the autosampler rack of your customers' choice – ready for either GC or HPLC analysis
- With the automatic wash station, the syringes can be washed both internally and the needle externally – eliminating any cross-contamination
- The analytical glass syringes at the heart of the ePrep allow the use of sealed containers at every step of the sample preparation
- The software is all task-based allowing easy customisation, if required, to suit the lab's particular requirements
- The positive displacement syringes result in no dripping when using organic solvents, unlike auto pipette systems

TARGET CANNABIS LABORATORIES

Key target laboratories include:

- Cannabis Cultivators – on site testing
- Contract Analytical Laboratories (specific and general)
- Drug Manufacturers

- Research Institutes

Key factors for these laboratories

- The ePrep allows off-instrument sample prep – one ePrep can feed multiple chromatographs
- Increase margins through staff reduction for routine sample prep – staff are better utilised for more value-added tasks
- Reliable sample preparation – free from human error
- Reduction in training costs of staff especially in labs with high staff turnover
- Standardisation of methods within a lab and between sister labs

Background information on types of testing carried out in a cannabis lab:

- *Potency analysis: Cannabinoids include THC, CBD, and CBN; by HPLC and GC.*
- *Terpene analysis: by GC/MS, GC/FID and HPLC.*
- *Heavy metal detection: cadmium, mercury, lead, copper, tungsten, and arsenic; by ICP/MS, ICP/OES, and AAS.*
- *Pesticide testing: by HPLC, GC/MS, and LC/MS (QuEChERS lipid depletion)*
- *Residual solvents: extract solvents acetone, ethanol, butane, benzene, and propane; headspace GC/FID and GC/MS.*
- *Microorganisms and mycotoxins: by LC/MS or PCR*

HOW TO SELL EPREP INTO CANNABIS LABORATORIES

- The cannabis method has been fully validated and is ready to use immediately – the workflow is supplied to the customer
- The ePrep can be set up from unboxing to full commissioning in a couple of hours – ready to go
- The ePrep will automate extraction, filtering and final vial preparation – cannabis sample in, final vial solution out
- Loading and starting the ePrep workflow and, the deck set up for solvents and containers, can be carried out in minutes with minimal training
- Customisation of the workflow with different filters, various autosampler racks to suit the lab's chromatographs, different dilution factors – is all easy

WHY USE THE EPREP FOR CANNABIS SAMPLE PREPARAION

- People make mistakes, robots don't. Get the same outcome each and every time
- People can't match the accuracy and precision of the ePrep, no matter how hard they try
- People quit, the ePrep stays
- People require training and TLC (tender loving care), the ePrep doesn't
- People can't work 24/7, the ePrep can
- People are better suited to tasks where they can use their brains, let the ePrep do the boring stuff for you

USER EXPERIENCE

User feedback includes:

- A very experienced hospital biochemist needed 3 weeks to program a Tecan® for an immunosuppressant clinical analysis workflow. The same workflow took 2 ½ minutes to set up on the ePrep software!
- A university graduate student became an expert user within an hour
- A pain management drug analysis (urine) was reduced to 5 minutes using the precursor to µSPEed for sample clean up. The extract was satisfactory for direct MS infusion (no LC step for the targeted analysis)
- On a pharmaceutical company's drug panel, automated sample preparation was achieved on whole blood samples with improved extraction efficiency and reproducibility using ePrep's µSPEed cartridges.

CONSUMABLE AND COMPLEMENTARY PRODUCTS

A range of patented consumables and complimentary products have been developed for the ePrep instrument. These have been specifically designed for sample preparation automation, method development, task efficiency and miniaturization. See ePrep website at www.eprep-analyitcal.com for details,

ROI CONSIDERATIONS

Area	Opportunity	Description	Possible Efficiency Gain
Time	• Unattended Operation (Scheduling). • Reduced Training Hours	Sample preparation can be processed in the background or outside normal work hours improving resource scheduling. It also allows additional work to be handled by the same number or fewer people. ePrep has a quick learning curve. Staff members can acquaint themselves with its operation in a matter of minutes as compared to spending hours mastering sample preparation techniques.	5%
Financial	• Reduced Consumable Costs. • Reduced Solvent-Related Costs. • Analytical Instrument Utilisation	Analytical syringe allows for small volume applications, leading to reduction in solvent, vial sizes and chemicals. The opportunity to reduce solvent usage can impact purchase cost and disposal cost. Higher utilisation of analytical instrumentation by reduced re-works and use of lower spec instruments through cleaner targeted sample preparation.	4%
Personnel	• Human Resource Reallocation. • Reduction of Exposure to Hazardous Chemicals • Increased Employee Satisfaction	Freeing highly-trained scientists from manual lab-work to focus on more skilled tasks, such as the analysis of data and planning of experiments. With analytical syringe automation, hazardous chemicals can be handled in sealed vials to minimise the health risk of staff members. Highly qualified staff members can dedicate their time doing stimulating work instead of tedious sample preparation tasks	5%
Workflow Optimisation	• Less Mistakes and Less Re-work. • Operational Reliability. • Compliance Simplification. • Positive Displacement Applications. • Automated microSPE.	Process standardisation provides predictability that is not operator dependant. Reproducible, reliable and robust. Offers exceptional accuracy and precision even when dispensing the smallest volumes from positive displacement syringes. Workflows can be validated and saved making them reproducible and user independent. Workflows can be saved for standardisation and future use. They can also be	7%

	• Automated Disk Filtering	shared between laboratories. miniaturization and automation of SPE methods. On-deck automated disk filtering can be added to any step within a workflow.	
Chromatography	• Column Protection • Inlet Liners	It is anticipated that µSPEed cartridges will give cleaner extracts as a result of high resolution separation. Cleaner extract should reduce GC inlet liner contamination and improve chromatography. Anticipated 2 to 4 increase in liner lifetime. Greatest factor in reducing capillary column lifetime is from sample contamination. Clean µSPEed extract samples should result in 2 to 4 times improvement in capillary lifetime.	4%
Environment	• Reduced Solvent Usage	ePrep's small volume capabilities allow for a significant reduction in solvent use, minimising environmental impact.	Green Policy

Q&A SUMMARY

Question	Answer
Can we change the amount of cannabis flower or the amount of solvent used for extraction in the app?	Yes, you can but there are some things to think about. The sample is extracted using a vortexing approach. For efficient extraction, the flower sample needs to be 'pulled' into the vortex. A good vortex is dependent on the vortex speed, amount of solvent, size of the container and the amount of sample. So, changing any of these parameters might require also changing one of the other parameters to maintain a good vortex.
We use an internal standard, can we adapt the workflow?	Yes, you can. Any additional task is easily inserted and the app describes where this would be in the workflow and some conditions.
Do we have to re-create the entire workflow ourselves?	No, the workflow is provided to the lab and easily incorporated in the software.
Some days we have only three samples but other days we have 20 samples, is the workflow flexible?	Yes, the number of samples can easily be changed by varying the number of containers in the deck of the software.
Can I trust my lab technician to run the workflow?	Yes, the software includes a graphical display of the containers required on the deck which allows the operator to easily see what the set-up requirement is needed. Also, the initialisation of the workflow includes an actual scan of the ePrep deck to ensure all syringes, racks and containers are present as detailed in the workflow. If anything is missing, a screen alert is seen.
We use a different extracting solvent for our method, will this be OK with the ePrep?	The method has been validated using ethanol against a regulated GMP method so for this app, ethanol is the solvent recommended. However, other water miscible solvents like acetonitrile or methanol could be used by the ePrep but would need to be validated.
When I get the ePrep, what do I do?	The ePrep can be set up quickly by the user. Technician installation is limited or not required (supplied fully assembled and auto-calibrates).
What about software upgrades?	Software upgrades can be performed remotely.
What is the ePrep breaks down?	The ePrep is designed for simple and rapid modulated service replacement and support is available.