



Orange Photonics

# Maximize Your Efficiency, Own Your Quality

## Extraction Optimization with Real-time Quality Control

Cannabis extraction is becoming increasingly competitive, with quality at the forefront of a brand's reputation. With tighter margins, efficiency is a key to profitability. LightLab 3 Cannabis Analyzer supplies extractors with cannabinoid data throughout the extraction process, from biomass purchasing to final product. This data can be used to rapidly identify inefficiencies, contain costs, and fine-tune formulations to create consistent, quality product.

### Executive Summary

- On-site, at-line testing enables team members to make real-time decisions.
- There are over six standard testing touch-points in an extraction process.
- Quality and efficiency improvements can be rapidly monetized with lower burdened COGS, higher yield, and better quality.
- LightLab 3 HPLC technology allows any team member to test with accuracy equal to or better than labs.

## AT-LINE TESTING TOUCH-POINTS



### Biomass Evaluation

What is the fair market value of this trim? \$1,000 or \$3,000? How does the material compare to the Certificate of Analysis the seller offered? The capacity to analyze the cannabinoid content of trim in minutes supports transparent negotiations and eliminates costly purchasing mistakes.



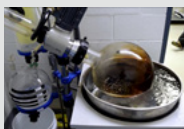
### Vessel Composition

Fully decarboxylated 20% biomass requires different extraction programs than 5% fresh biomass. Post-extraction analysis identifies material channeling and unextracted cannabinoid content. At-line analysis enables real-time production decisions, ensures complete extraction, reduces over extraction, and production latency.



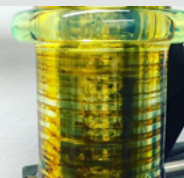
### In-process Extract

Analyzing weight percent values of the cannabinoids in raw cannabis extract will confirm the mass balance of cannabinoids in vs out. Sample pulls during extraction can help determine end points and save time. The ability to rapidly determine the composition of your product identifies process optimization opportunities that can save time and produce a more consistent, higher quality product.



### Winterization

Testing winterized product, in-process solvent, and waste waxes inform process completion and indicate issues like cannabinoids in waste material. Various factors influence the integrity and speed of the separation including moisture content, extraction method, temperature, and vessel transfer. At-line cannabinoid testing informs next steps.



### Distillation

Testing in the final phase of extraction is essential in ensuring peak cannabinoid concentration. Many distillates contain degradation products like Delta-10 THC and CBN. These degradations reduce cannabinoid content and affect final product quality. Testing catches process or equipment problems which avoid expensive disasters and contribute to consistent, high quality final products.



### Spent Material/Raffinate

One of the best indicators of process efficiency is tracking how much cannabinoid content remains in post-extraction material. Channeling, failure to pull a complete vacuum, over-exposure to heat, time loss, and unsuitable starting materials all contribute to sub-par product, reduced margins, lower retail value and impact customer loyalty.

LightLab 3 HPLC technology is the same that laboratories employ, ensuring accurate results with no training or technical background required. LightLab's proven performance matches or exceeds lab accuracy in proficiency tests including University of Kentucky Hemp Proficiency Testing Program and NIST CannaQAP Quality Assurance Program.

## REAL-WORLD EFFICIENCY EXAMPLE

Process	Cannabinoids Remaining	% Lost per Step	% Lost Total	The Culprits	Path to Improvement
Extraction	80 mg	20%	20%	Extraction too short, channeling	Check extraction time and run sample from various positions in the extraction vessel to see if there is channeling or uneven extraction
Winterization	70 mg	12.5%	30%	Temperature, filtering method	Check waxes for cannabinoids, adjust temperature or filter parameters
Distillation	63 mg	10%	37%	Temperature, vacuum	Check D10THC and CBN for abnormally high levels which indicate a vacuum leak or incorrect temperature



Orange Photonics, Inc.  
 (603) 573-9212  
[orangephotonics.com](http://orangephotonics.com)