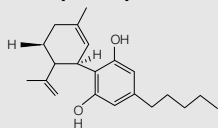




Common Laboratory Techniques in the Cannabis Processing Workflow

Cannabidiol (CBD) Structure



Cannabis contains > 80 Cannabinoids

Therapeutic effects for:

- Inflammatory diseases (e.g. MS)
- Degenerative illness (e.g. Parkinson's)
- Diminished side effects (e.g. chemotherapy)

Tetrahydrocannabinol (THC)

- Psychoactive

Cannabidiol (CBD)

- Non-psychoactive

Cannabis harvesting

Check cannabinoid and moisture levels



NIR

NIRFlex



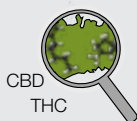
ProxiMate™



- Accurate results in seconds
- Continuous operation

Compound extraction

Supercritical CO₂ extraction, solvent extraction, etc.



NIR

NIRFlex



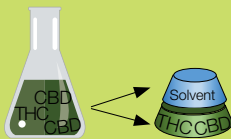
ProxiMate™



- Accurate results in seconds
- Continuous operation

Extract concentration

Reduce volume prior to separation



Rotary Evaporator

Industrial Rotavapor®



- Batch or Continuous evaporation in 20 or 50 L evaporation flasks
- Distillation rate of 14 L/h
- FDA-compliant materials
- Automatic foam control

Cannabinoid separation

Separate the CBD component



Preparative Chromatography

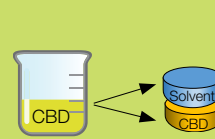
Pure Chromatography Systems



- Fully automated system
- Combination of flash and prep HPLC
- UV and ELS detectors

Cannabinoid fraction concentration

Concentrate for further processing



Rotary Evaporator

Industrial Rotavapor®



- Batch or Continuous evaporation in 20 or 50 L evaporation flasks
- Distillation rate of 14 L/h
- FDA-compliant materials
- Automatic foam control

Further processing

Formulation



Drying

Mini Spray Dryer



Lyovapor™



Quality control with NIR

NIRFlex



BUCHI solutions and applications

Solutions:

[NIRFlex N-500](#)

[ProxiMate™](#)

[Rotavapor® R-220 Pro](#)

[Rotavapor® R-250](#)

[Pure Chromatography Systems](#)

[Sepacore®](#)

[Mini Spray Dryer B-290](#)

[Lyovapor™ L-200/L-300](#)

Applications:

220/2015: [Industrial evaporation for cannabis products](#)

Select publications with BUCHI products:

Smeriglio et al. (2018). *Filoterapia* 174:101-108.

Calvi et al. (2018). *Journal of Pharmaceutical and Biomedical Analysis* 150:208-219.

Andernach et al. (2016). *Forensic Toxicology* 34(2):344-352.

Lanz et al. (2016). *PLOS ONE* 11(1): e0147286.