



MILESTONE'S TECHNOLOGY PROVIDES
CANNABIS PROCESSOR
QUALITY AND EFFICIENCY IN TERPENE EXTRACTION

| CUSTOMER Medizin is a premier cultivator, producer and dispensary of cannabis related products based in Las Vegas, NV. Their mission is to provide compassionate, dignified, and affordable access to medical and recreational cannabis for approved patients. They are committed to providing a wide range of the highest quality products suited to meeting the unique needs of each patient.

| CHALLENGE Rapidly expanding departments for their finished products had been putting pressure on their production department, who was experiencing difficulties keeping up with demand.

| SOLUTION "The ETHOS X is the only instrument on the market that can perform this technique. After seeing the unit in operation I was convinced that this instrument would improve our process and final product."

| BACKGROUND

Medizin is in the process of scaling up production to support aggressive corporate growth goals, with a focus on developing new products and optimizing manufacturing processes for maximum efficiency. Rapidly expanding departments for their finished products had been putting pressure on their production department, who was experiencing difficulties keeping up with demand.

| IMPLEMENTATION

A second challenge was sourcing terpenes for their new vape pen product line. Purchasing directly from third party vendors was either too expensive or yielded inferior products, thus they decided to research doing their own extractions in-house. What they found is the traditional technique of steam distillation is a longer extraction process than desired and is difficult to scale. Supercritical CO₂ extraction is expensive to implement and has limitations in the types of materials that can be used within the system.

"I think that Solvent-Free Microwave Extractors like the ETHOS X will become the industry standard for terpene isolation from cannabis" said Stephen Markle, Director of Infused Products.

LAB PROFILE MICROWAVE EXTRACTION | CANNABIS



| SOLUTION

The team elected to purchase an ETHOS X Microwave Extraction System from Milestone after a demonstration showcased its state-of-the-art technology completing a terpene extraction in less than an hour. Since the ETHOS X performs solvent-free microwave extraction requiring no preliminary clean-up or solvent exchange steps, a more complete terpene profile, and thus a higher quality product is produced.

“The ETHOS X is the only instrument on the market that can perform this technique. After seeing the unit in operation I was convinced that this instrument would improve our process and final product.”- said Stephen Markle

| CONCLUSION

Medizin employs a team of full time chemists and lab technicians not only to develop new products, but also to optimize their extract manufacturing process for maximum efficiency.

“Since the ETHOS X has been installed, the isolation of terpenes now possible allows us to create a lot of different products that other manufacturers using CO₂ or butane extraction cannot.”- stated Stephen Markle



“The speed, ease of use, and low level of maintenance has been a real bonus for our team of chemists carrying out the high workload of extractions.”

– Stephen Markle, Director of Infused Products, Medizin

| FUTURE PLANS

Medizin is driven to produce the highest quality and most diverse range of cannabis concentrates in the entire state of Nevada, which they firmly believe is a result of the purity of extraction assisted by the ETHOS X. Such is the demand for their products that they will be scaling up production and opening the largest cannabis entertainment complex in the world in November 2018. It is their continuing wise investment in people and technology like the ETHOS X, which provides the scalable platform for this rapid growth.

| SOLVENT-FREE MICROWAVE EXTRACTION

The analytical procedure for essential oils and aromas from plant or spices comprises two steps: extraction by steam distillation, and analysis by GC or GC-MS. While the analysis step requires just a few minutes, extraction takes at least several hours. Even today the standard procedure is based on the Clevenger method, which dates back to 1928.

To address the limitations of this 90-year-old technology, Milestone developed the new ETHOS X for the Microwave Green Extraction of Natural Products.

The ETHOS X performs solvent-free microwave extraction at atmospheric pressures of fragrances, such as terpenes and essential oils in plant material. These methods involve placing the sample in the microwave reactor. A cooling system outside the microwave continuously condenses the vapors which are collected in dedicated glassware, and the excess of water is refluxed back into the extraction vessel to restore the in-situ water of the sample. Once the essential oils have been extracted, they can be analyzed directly by GC-MS without any preliminary clean-up or solvent exchange steps.

Learn more at www.milestonesci.com or request an on-site demonstration at mwave@milestonesci.com

| ABOUT MILESTONE

With over 50 patents and more than 20,000 instruments installed in laboratories around the world, Milestone has been widely recognized as the global leader in metals prep technology for the past 30 years. Committed to providing safe, reliable and flexible platforms to enhance your lab's productivity, customers worldwide look to Milestone for their metals digestion, organic extractions, mercury analysis and clean chemistry processing needs.



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