

# APPLICATION CASE STUDY



Graver Technologies

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ACS-013

## CBD Oil Filtration

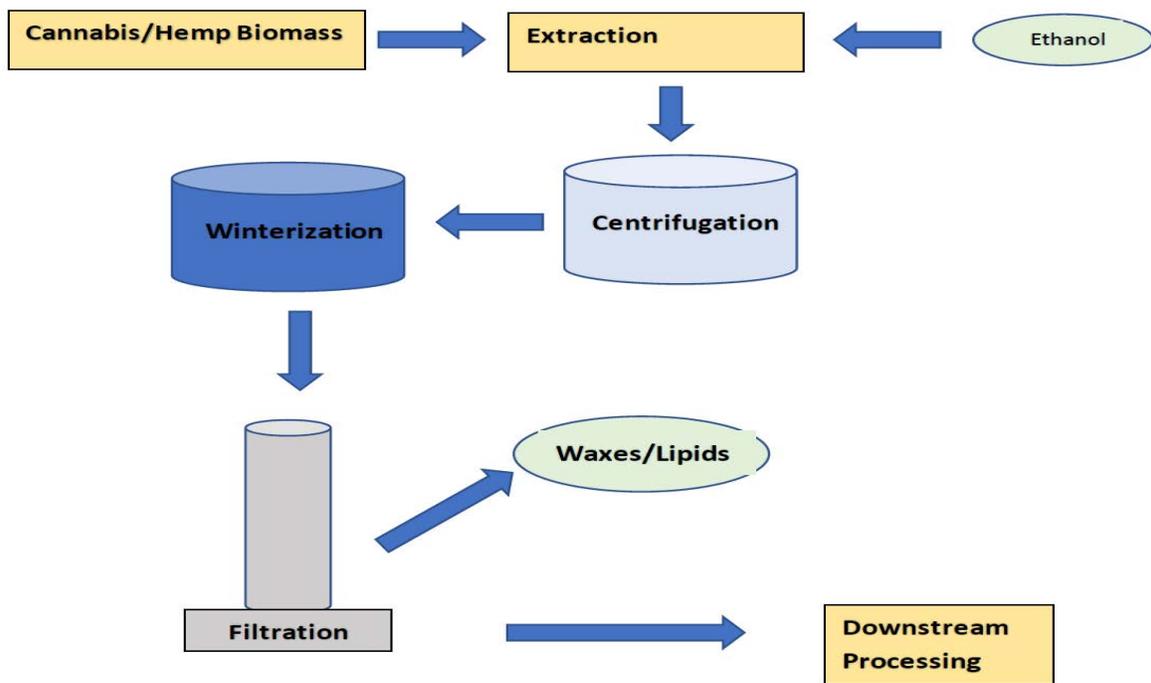
<b>Application:</b>	Polishing Filtration of Plant Extracts
<b>Application Detail:</b>	Recovery of CBD oil from Cannabis and Hemp
<b>Graver Product:</b>	Graver Technologies QXL and GFC

### Discussion:

With the changes occurring to varying degrees in the legalization of cannabis, the demand for purification technologies for the components of the cannabis plant (and hemp) have significantly increased. While there is still discussion around the question of whether CBD is a drug (now approved) or a natural food supplement, it is critical that the process meet the necessary standards for the prospective market.



There are a growing number of processes being developed, some of which are being patented, for the production of the CBD oil, but the common first step involves extraction. Ethanol and CO<sub>2</sub> extraction are probably two of the most commonly used methods for isolating the oil. In these processes, the leaves/flowers are macerated and placed into solvents, such as ethanol, or at lower temperature with CO<sub>2</sub> to extract components of the plant. Because many other plant components can be co-extracted with the cannabinoids, these contaminants can be removed by “winterization”, ( -20 to -80 ° C) for 24–48 hours. Components such as waxes, triglycerides and chlorophyll “solidify” and can then be removed by filtration. Since these materials can still be deformable, a composite construction such as the Graver QXL Filter Series is effective in capturing these particles. Additionally, the Graver GFC Filter Series has been found to be effective in removal due to the inherent charge of the glass media. With the cannabidiols isolated, further purification can then be accomplished by ion exchange, acid-based chemical reactions, various types of chromatography or distillation to produce a marketable product.



#### Additional Insights:

- Soft, deformable particles are best removed utilizing a filter media with depth. Traditional depth filters, often referred to as melt blown filters can be used. However, filters such as the Graver QXL is a composite filter, having the advantage of a depth media while offering a pleated design for more surface area, which equates to improved flow.
- Biological materials tend to be negatively charged at a neutral pH. It is possible to take advantage of this charge character to remove contaminants using a positively charged filter media such as microfiberglass media or a filter aid (diatomaceous earth).