

Purification method using Sepiatec SFC instrument and 96 % CO₂ is reported.

1. Introduction

Natural substances can provide potential compounds for new therapeutics, fragrances, or flavors, but high purity or the removal of secondary metabolites may be necessary for further research or processing.

To ensure the removal of the psychoactive component tetrahydrocannabinol (THC) to 100-1000 ppm levels, CBD purification must be done. This is necessary because THC is a highly controlled substance in most countries. The Sepiatec SFC instrument from BUCHI with the PrepPure CBD column can be used to remove other natural products of hemp plants as well.

2. Experimental

Set-up: Sepiatec SFC instrument; PrepPure CBD 250 x 4.6 mm

Mobile Phase: A = carbon dioxide; B = methanol

Mobile Phase condition: 96 % solvent A and 4 % solvent B; isocratic run

Samples: hemp leaves extract, Cannabidiol (CBD) distillate, and isolated compounds

Separation: The PrepPure CBD column was conditioned for 5 min at a flow rate of 6 ml/min with 96/4 % supercritical carbon dioxide/methanol. The samples were injected automatically using the sample loop and the run was started (run time = 10 min).

The UV detection wavelength was set at 220 nm, the back pressure regulator was set at 150 bar and the column oven was heated to 40 °C. All runs were conducted under the same conditions.

3. Results and discussion

Figure 1 shows the chromatograms of the hemp leaves extract, CBD distillate, and isolated compounds. Due to the good solubility of many molecules during extraction, many other components are eluted in the chromatogram of the hemp leaves extract. Cannabidiol (CBD), Tetrahydrocannabinol (THC), Cannabichromene (CBC), and Cannabigerol (CBG) can be separated well from each other under these run conditions. The CBD and CBG isolates show a very high purity of the respective component.

4. Conclusion

Cannabinoids can be efficiently separated using prep SFC and the new PrepPure CBD column developed for CBD purification. CBD, THC, CBC, and CBG can be separated from each other with good resolution.

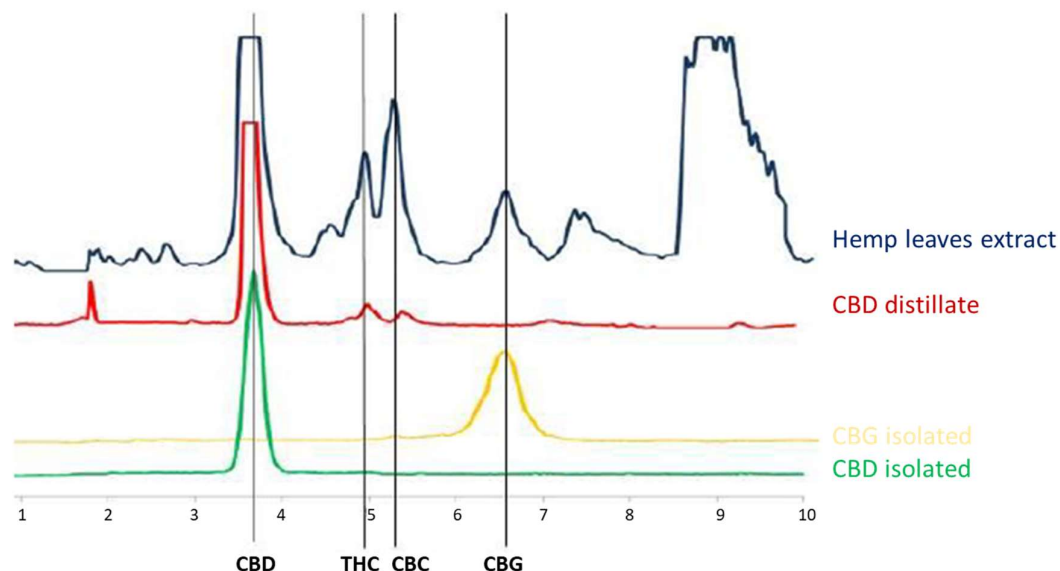


Fig. 1: purification of hemp leaves extract, CBD distillate, and isolated compounds