Poster 49

Efficient cannabinoid extraction using FlackTek technology

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Abstract

Background: FlackTek™ technology can enhance product quality and potency by employing a bladeless, non-invasive mixing process. This approach minimizes the requirement for excessive heat, effectively safeguarding the compounds of interest from degradation and damage that can happen during mixing and purging. By achieving uniform distribution and homogeneity, FlackTek combines pulverization and blending, ensuring uniform reduction in particle size and even dispersion across the material resulting in higher-quality products. This technology has been applied in several fields, like 3D printing, adhesives and sealants, chemicals, electronics, inks and coatings, medical devices, cosmetics, pharmaceuticals, polyurethanes, silicones [1,2]. Several methods have been employed for cannabis extraction, such as, supercritical carbon dioxide and solvent-based techniques, including Soxhlet extraction, dynamic maceration, and ultrasonic and microwave-assisted extraction [3]. Objective: The goal of this work was to apply FlackTekTM technology to oil cannabis extraction. Methods: THC-dominant cultivar: 5ng of ground flower was mixed with 20 g of MCT oil (1:4). Using FlackTek conditions: 2000 RPM, samples were collected at time points: 5, 10, 15, 20, and 30 min. Extraction following Ph Eur 11.5 cannabis flower monograph was used as reference method. Tetrahydrocannabinolic acid (THCA) and tetrahydrocannabinol (9-THC) content was analyzed in a HPLC-DAD system (Agilent 1260 Infinity II) with a C18 column (Poroshell 120 EC-C18, 3.0 × 50 mm, 2.7 µm) and extraction was performed using a 1200-500Vac FlackTek SpeedMixer. CBD-dominant cultivar: 5 g of ground flower was mixed with 10 g of olive oil (1:2). Using FlackTek conditions: 3500 RPM, samples were collected at time points: 5, 10, and 15 min. Cannabidiolic acid (CBDA) and cannabidiol (CBD) were quantified using a HPLC-DAD system (Thermofisher Ultimate 3000) with a C18 column (Hypersil Gold3UM 150x3 mm) and a FlackTek SpeedMixer DAC330-100 PRO was used for extraction. Results: THCA measurements are within %RSD < 5, indicating that there is no significative difference between the five extraction time points. To confirm that THC is as easily extracted, THCA in the ground flower was first decarboxylated to THC at 120 °C, for 30 min in an oven, before extraction. Conclusions: FlackTek technology enables rapid and effective extraction of cannabinoids directly into MCT or olive oil. Specifically, THCA/ THC was successfully extracted in just 5 minutes, and CBDA/ CBD in 10 minutes.

Keywords: cannabis; extraction; THC; CBD

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