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Gorilla Glue Cannabis Extracts: Cannabinoid Profiling and CBD Hydrolysis Investigation

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Abstract

Background: Medicinal plants are a significant source of bioactive compounds with pharmacological relevance, leading to increased interest in species such as *Cannabis sativa L.* This plant is particularly rich in cannabinoids, a class of biologically active compounds with potential therapeutic benefits. To date, more than one hundred cannabinoids have been identified; however, only a few, such as cannabidiol (CBD), have been the focus of extensive research [1]. In fact, Epidiolex® is an oral solution that contains 100 mg of CBD per 1 mL and has already been approved for the treatment of epilepsy symptoms [2]. The decarboxylated Gorilla Glue (GG) cultivar extract used in this study was chosen for its high CBD content. A decarboxylation step was essential for converting cannabidiolic acid (CBDA) present in the flower into its biologically active neutral form, CBD. This cannabinoid is the most commonly found in cannabis-related products; consequently, it has the potential to become an environmental contaminant, highlighting the critical need to assess its stability in different conditions. **Objective:** This study aims to evaluate the cannabinoid profile of decarboxylated GG extract and the stability of CBD within the extract under different pH conditions (4, 7, and 9) at 50 ºC over a 9-day period. **Methods:** Cannabis flowers were finely ground using a mixer mill (Retsch MM400) equipped with stainless steel grinding balls. The decarboxylation step was carried out in an oven at 130 °C for 2 h. Finally, dynamic maceration extraction was conducted in the same ball mill using 96% (v/v) ethanol for 10 minutes. The resulting extracts were filtered, diluted, and analyzed by high-performance liquid chromatography (HPLC) using an Agilent 1260 Infinity II system equipped with an InfinityLab Poroshell 120 EC-C18 column [3]. Hydrolysis assays were then conducted by incubating the extract under sterile conditions at different pH levels. **Results:** The cannabinoid profile of the GG decarboxylated extract, expressed as % (w/w), was found to be: 49.34% CBD, 2.43% CBC, 1.82% Δ^9-THC, 0.89% CBDA, and 0.35% CBN. After nine days under hydrolysis conditions, CBD remained present at 81%, 60%, and 61% at pH levels of 4, 7, and 9, respectively. **Conclusions:** CBD constitutes 49.34% of the decarboxylated GG extracts, and preliminary hydrolysis studies indicated that it is more stable under acidic conditions.

Keywords: Cannabis; CBD; Decarboxylation; Hydrolysis

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