

Investigations on Anti-oxidant and Anti-inflammatory Potential of *Cannabis sativa* Extracts and Fractions using *in-vitro* Models

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Abstract—*Cannabis sativa* possess multiple pharmacological effects and can be used in the treatment of diseases such as multiple-sclerosis, epilepsy, depression or anxiety, arthritis, gastrointestinal and sleep disorders. The objective of this study was to investigate the antioxidant as well as anti-inflammatory effects of methanolic extract, fractions and sub-fractions obtained from aerial parts of *Cannabis sativa*. The antioxidant properties were evaluated using *in vitro* DPPH assay. We used novel 96-well plate method instead of conventional cuvette method to determine anti-oxidant activity that allowed us to calculate time dependent IC₅₀ values. Ascorbic acid and quercetin were used as standards in the experiment. The results indicated that *Cannabis sativa* extract (CSE) showed significant free radical scavenging activity. Among fractions, F-3 fraction had most potent anti-oxidant activity. Also, few sub-fractions obtained from F-3 fraction possess strong antioxidant properties. We also studied anti-inflammatory effects of *C. sativa* extract (CSE) and fractions using RAW 264.7 cell line *in-vitro*. The results indicated that CSE and F-3 effectively inhibited lipopolysaccharide (LPS) induced inflammatory responses by suppressing TNF- α release.