

## **Abstract ( English version )**

Title: Analytical Properties of Selected Phytocannabinoids

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I investigated the issue how to determine the delta-9-tetrahydrocannabinol ( $\Delta^9$ -THC) and tetrahydrocannabinol acids (THCAs) by HPLC and GC. THCAs, the precursors of  $\Delta^9$ -THC, are the compounds of *Cannabis sativa*. They are unstable, decarboxylate easily and convert into  $\Delta^9$ -THC at higher temperature. I examined the THCAs instability both in marihuana and in extracts from marihuana at the higher temperature. During my experiments the temperature conversion of THCA into  $\Delta^9$ -THC was the highest at temperatures of approx. 100°C-120°C and the  $\Delta^9$ -THC content decreased at temperatures over 120°C. I evaluated the influence of various stimuli (e.g. light, UV radiation, boiling of marihuana in n-hexane, various temperatures, ways of storage) on the  $\Delta^9$ -THC content in marihuana both during drying and preparation of samples before the analysis. The increased  $\Delta^9$ -THC content was not only the result of higher temperature but also the UV radiation, however, to a smaller extent. The influence of the UV radiation should be further investigated. I compared the values of the  $\Delta^9$ -THC content determined by HPLC and GC. The  $\Delta^9$ -THC content determined by GC was higher than the content determined by HPLC. One of the main objectives was to find a suitable method how to remove THCAs from samples before the analysis to prevent THCAs from converting into  $\Delta^9$ -THC during the GC analysis due to higher temperature, which would cause an increase of  $\Delta^9$ -THC content in the sample. Our legislation requires only the measurement of the free  $\Delta^9$ -THC content without the THCAs conversion into  $\Delta^9$ -THC. I tried using the SPE and LL extraction to remove THCAs. I managed to remove THCAs by the LL extraction of the n-hexane extract from marihuana with 0.2M NaOH solution.