

ON-SITE DETECTION AND QUANTIFICATION OF SELECTED SEMI-SYNTHETIC AND NATURAL CANNABINOIDS IN CANNABIS PRODUCTS USING CAPILLARY ELECTROPHORESIS - DEEP UV FLUORESCENCE

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Hexahydrocannabinol (HHC) and tetrahydrocannabioctyl (THC-C8) are semi-synthetic cannabinoids (SSCs) that are increasingly added to cannabis products. These substances are often found in mislabelled and poorly regulated products, which have gained popularity—particularly among young people and children. Although frequently marketed as safe alternatives to Δ^9 -tetrahydrocannabinol (Δ^9 -THC), their psychotropic effects and potential health risks are often underestimated. Thus, the first aim of the study was to develop and validate a method for the rapid quantitative analysis of Δ^9 -THC-C8, HHC, Δ^9 -THC, and cannabidiol (CBD) in cannabis products that are suitable for use outside of traditional laboratory settings. The second aim was to screen some cannabis products and assess the method's practical applicability. For this purpose, a portable, in-house-built device based on capillary electrophoresis coupled with a deep-ultraviolet fluorescence detector was used. The developed methodology met the validation criteria. The validated method was applied to 16 cannabis products. In most cases, the declared cannabinoids were detected. However, the measured concentrations were significantly lower than those stated by the manufacturers. Current work presented the first opportunity to detect SSCs outside of the laboratory using a portable device operable by non-chemists. The device enables rapid on-site screening of cannabis products by law enforcement, particularly at events where such products are encountered. The methodology currently covers the two most prevalent SSCs and can be extended to include newly emerging cannabinoids.