

Inclusion of new semi-synthetic cannabinoids in routine DUID cases

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Semi-synthetic cannabinoids (SSCs) are becoming more popular as legal replacement of tetrahydrocannabinol (THC). Products containing hexahydrocannabinol (HHC), hexahydrocannabiphorol (HHC-P), tetrahydrocannabiphorol (THC-P) and tetrahydrocannabidiol (H4-CBD) are readily available in e.g. kiosks or online shops. As soon as a compound becomes illegal, both as narcotics and regarding driving under the influence of drugs (DUID), the next analogue takes over the market. Therefore, it is difficult to predict what should be detectable in DUID cases. In Copenhagen, both analysis of seized drugs and biological samples are being performed at the Section of Forensic Chemistry. The information regarding which compounds are found in seized materials can be valuable for the toxicological investigations of forensic cases.

At our section, HHC was first observed in seized materials in 2022. It was present in 135 seized materials received from police and customs in Eastern Denmark in 2022–2023. In the same period, HHC-P, THC-P and H4-CBD were detected in 20, 9 and 53 seized materials, respectively. With this information in mind, we developed an analytical strategy for including SSCs in our LC-MS/MS analysis of biological samples, including those from DUID cases.

HHC was scheduled as a narcotic substance in Denmark in May 2023 followed by HHC-P, THC-P and H4-CBD in January 2024. Of the earlier mentioned seized materials containing HHC, 33% of these were collected after it was declared illegal. HHC-P, THC-P and H4-CBD only became prominent after illegalization of HHC, where 94% of the mentioned cases were confiscated after HHC was prohibited.

Targeted screening of the new SSCs were included in our routine LC-MS/MS analysis for quantification of THC in blood from DUID cases. Purchased reference material of the compounds were used to prepare a spiked cut-off QC in blood. Positive findings of HHC, HHC-P, THC-P and H4-CBD above the cut-off were rare in blood samples. Confirmation and quantification were only performed in few DUID cases. The analytical strategy and examples of cases with SSCs will be presented.