# Appendix No. 1 – ML 4909/21

Records documenting analysis of the sample using U-HPLC-HRMS/MS metabolomic profiling (targeted screening) method

#### **Sample description**

| Lab code   | Sample name (provided by the client) | Sample description |
|------------|--------------------------------------|--------------------|
| ML 4909/21 | Olejek konopny 10% CBD Dekoktum      | Hemp oil           |

### **Testing strategy**

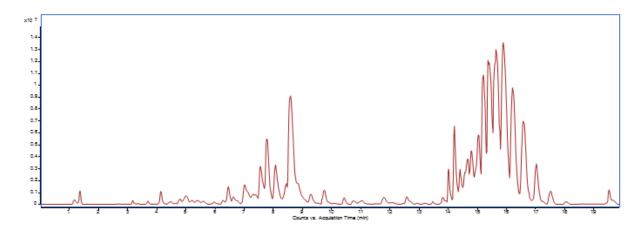
Metabolomic profiling (targeted screening) strategy was selected for the testing of the sample (laboratory code ML 4909/21). This type of analytical approach is based on UCT internal databases of compounds which may occur in *Cannabis sativa* L. and products thereof; the first UCT database (A) includes molecular spectral information for 246 minor phytocannabinoids, the second UCT database (B) includes molecular spectral information for 151 other (non-cannabinoid) biologically active compounds (e.g. terpenoids, phenols, bibenzyl stilbenes, fatty acids, amides, flavones, lignans, flavonoid glycosides, lignanamide derivatives). The analysis of the given sample was performed by ultra-high performance liquid chromatography coupled to high resolution tandem mass spectrometry (ISO 17025 accredited method KM 15, system E: U-HPLC-HRMS/MS (Q-TOF)). Detailed description of analytical procedures and conditions (SOP) are available at Laboratory.

#### **Testing conditions**

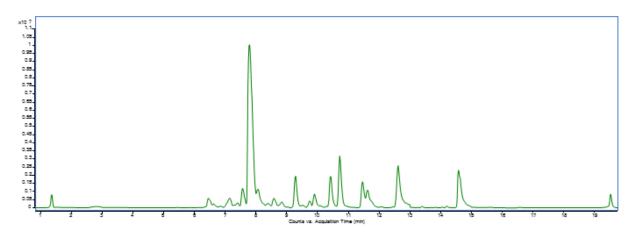
Sample preparation consisted of sample dissolution in ethanol and following dilution. Subsequently, a reversed-phase chromatographic column was used for the compound's separation; quadrupole/time of flight mass analyzer (Agilent 6560 Q-TOF) with electrospray ionization source was used for their detection. Each sample was injected into U-HPLC — HRMS/MS system in several dilutions to overcome matrix effects including column and/or detector saturation for particular compounds. The data were recorded and evaluated separately for both the positive and negative electrospray ionization mode (ESI+ and ESI-). For the data processing, Agilent MassHunter Profinder and Agilent MassHunter Qualitative Analysis softwares were used.

#### **Test results and interpretation**

The overall chemical compositions of the sample detectable under given method conditions are illustrated by total compound chromatograms (TCC) (**Figure 1 - 2**) recorded in ESI+ and ESI- ionization mode. The TCC shows all features (compounds) detected in the sample, non-filtered by the UCT databases.



**Figure 1:** ML 4909/21 - UHPLC-HRMS/MS total compound chromatogram obtained for undiluted sample in ESI+



**Figure 2:** ML 4909/21 - UHPLC-HRMS/MS total compound chromatogram obtained for undiluted sample in ESI-

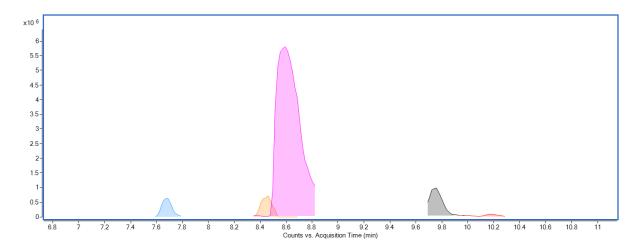
#### A) Targeted screening of phytocannabinoids

The following amounts of major phytocannabinoids (**Table I**) characterized by unique combination of exact mass and retention time RT, whose identities were confirmed by certified standards, were detected.

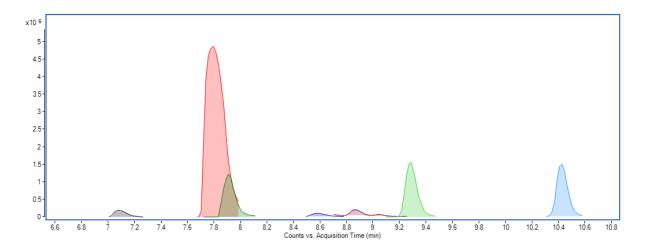
Table I: Number of major phytocannabinoids detected in the sample in ESI+ and ESI-

| Sample name | Number of major phytocannabinoids detected in ESI+ | Number of major phytocannabinoids detected in ESI- |
|-------------|--|--|
| ML 4909/21  | 5  | 8  |

Extracted ion chromatograms (XIC) of these compounds in both ionization modes (ESI+, ESI-) are documented on **Figures 3 – 4** and their overview is also summarized in **Table II**.



**Figure 3:** ML 4909/21 - UHPLC-HRMS/MS extracted ion chromatogram of major phytocannabinoids detected in ESI+ (obtained for undiluted sample)



**Figure 4:** ML 4909/21 - UHPLC-HRMS/MS extracted ion chromatogram of major phytocannabinoids detected in ESI- (obtained for undiluted sample)

**Table II:** Overview of major phytocannabinoids detected in ESI+ and ESI- (corresponding with the Figures 3 - 4)

| Measured exact mass <sup>a</sup> (neutral, monoisotopical) | Elemental<br>formula <sup>b</sup> | RT <sup>c</sup><br>(min) | Ionization mode | Identity (confirmed by certified standards) | Peak area <sup>d</sup> |
|--|-----------------------------------|--------------------------|-----------------|---|------------------------|
| 330.1832   | C20 H26 O4                        | 7.08                     | ESI-            | CBDVA                                       | 1.3E+06                |
| 286.1937   | C19 H26 O2                        | 7.67                     | ESI+            | CBDV  | 4.1E+06                |
| 358.2143   | C22 H30 O4                        | 7.79                     | ESI-            | CBDA  | 7.7E+07                |
| 360.2296   | C22 H32 O4                        | 7.91                     | ESI-            | CBGA  | 6.7E+06                |
| 316.2398   | C21 H32 O2                        | 8.44                     | ESI+            | CBG   | 4.9E+06                |
| 314.2252   | C21 H30 O2                        | 8.58                     | ESI+            | CBD   | 4.3E+08                |
| 286.1930   | C19 H26 O2                        | 8.58                     | ESI-            | THCV  | 1.7E+06                |
| 358.2143   | C22 H30 O4                        | 8.89                     | ESI-            | Δ <sup>9</sup> -THCA-A                      | 1.0E+06                |
| 358.2141   | C22 H30 O4                        | 9.06                     | ESI-            | CBLA  | 3.5E+05                |
| 310.1933   | C21 H26 O2                        | 9.28                     | ESI-            | CBN   | 9.7E+06                |
| 314.2253   | C21 H30 O2                        | 9.74                     | ESI+            | Δ <sup>9</sup> -THC                         | 6.4E+06                |
| 314.2251   | C21 H30 O2                        | 10.18                    | ESI+            | CBL   | 4.5E+05                |
| 314.2248   | C21 H30 O2                        | 10.43                    | ESI-            | CBC   | 8.9E+06                |

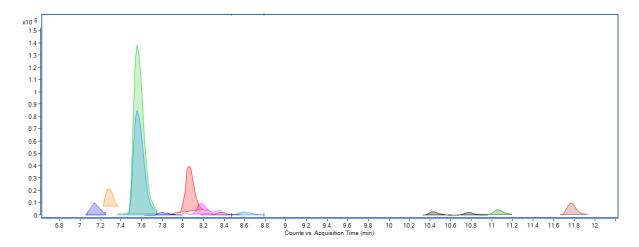
- a Mass error compared the theoretical exact mass < 5 ppm
- b Match of isotopic pattern confirmed
- c Retention time
- Peak area related to the undiluted sample prepared according to stated procedure

The following amounts of minor phytocannabinoids (**Table III**) characterized by unique combination of exact mass m/z and retention time RT were detected.

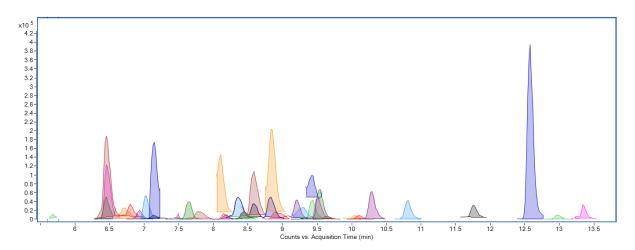
Table III: Number of minor phytocannabinoids detected in the sample in ESI+ and ESI-

| Sample name | Number of minor phytocannabinoids detected in ESI+ | ed in ESI+ detected in ESI- |  |
|-------------|--|-----------------------------|--|
| ML 4909/21  | 13   | 43                          |  |

Extracted ion chromatograms (XIC) of the detected compounds in both ionization modes (ESI+, ESI-) are documented on **Figures 5 - 6**. All detected phytocannabinoids (tentative identification) are also summarized in **Table IV** (ESI+) and **Table V** (ESI-). Considering the possible existence of isomeric forms, one detected compound may have several identities.



**Figure 5:** ML 4909/21 - UHPLC-HRMS/MS extracted ion chromatogram of 13 compounds with unique combination of exact mass and RT detected in ESI+ (obtained for undiluted sample)



**Figure 6:** ML 4909/21 - UHPLC-HRMS/MS extracted ion chromatogram of 43 compounds with unique combination of exact mass and RT detected in ESI- (obtained for undiluted sample)

Table IV: Overview of compounds detected in ESI+ (corresponding with the Figure 5)

| Cmp. | Measured exact mass <sup>a</sup> (neutral, monoisotopical) | Estimated elemental formula <sup>b</sup> | RT <sup>c</sup><br>(min) | Tentative identity (name of possible compounds) <sup>d</sup>   | Peak area <sup>e</sup> |
|------|--|--|--------------------------|--|------------------------|
| 1    | 312.2091   | C21 H28 O2                               | 7.13                     | 7.8-Dihydrocannabinol  | 6.2E+05                |
| 2    | 330.2200   | C21 H30 O3                               | 7.28                     | 8'-Hydroxyisocannabichromene/ cannabielsoin/abnormal cannabigeroquinol/10alpha-hydroxy trans delta- 8-tetrahydrocannabinol/10 beta-hydroxy trans delta-8-tetrahydrocannabinol/8 alpha-hydroxy- delta9-trans-tetrahydrocannabinol/8 beta- hydroxy-delta9-trans- tetrahydrocannabinol/tetrahydrocannabinol epoxide/hydroxy delta9.11-hexahydrocannabinol | 8.3E+05                |
| 3    | 314.2254   | C21 H30 O2                               | 7.55                     | Cannabicitran/(-)-delta9-cis-(6aS.10aR)-delta9-<br>tetrahydrocannabinol/(â')-delta7 -trans-(1R. 3R.<br>6R)-isotetrahydrocannabinol-<br>C5/cannabigeroquinone   | 9.5E+06                |
| 4    | 332.2357   | C21 H32 O3                               | 7.55                     | rac-6'-Epoxycannabigerol (2'S*. 3'R*)/rac-6'-<br>epoxycannabigerol (2'R*. 3'R*)/(-)-7-<br>Hydroxycannabichromane   | 5.8E+06                |
| 5    | 436.1890   | C26 H28 O6                               | 7.81                     | Desmodianone A/desmodianone<br>D/desmodianone E  | 1.7E+05                |
| 6    | 330.2203   | C21 H30 O3                               | 8.06                     | 8'-Hydroxyisocannabichromene/ cannabielsoin/abnormal cannabigeroquinol/10alpha-hydroxy trans delta- 8-tetrahydrocannabinol/10 beta-hydroxy trans delta-8-tetrahydrocannabinol/8 alpha-hydroxy- delta9-trans-tetrahydrocannabinol/8 beta- hydroxy-delta9-trans- tetrahydrocannabinol/tetrahydrocannabinol epoxide/hydroxy delta9.11-hexahydrocannabinol | 2.5E+06                |
| 7    | 314.2247   | C21 H30 O2                               | 8.18                     | Cannabicitran/(-)-delta9-cis-(6aS.10aR)-delta9-tetrahydrocannabinol/(â')-delta7 -trans-(1R. 3R. 6R)-isotetrahydrocannabinol-C5/cannabigeroquinone  | 5.9E+05                |
| 8    | 346.2147   | C21 H30 O4                               | 8.36                     | Trans-10-ethoxy-9-hydroxy-delta6a(10a)-tetrahydrocannabivarin-C3/cannabimovone/(+)-(9S.10S)-trans-cannabitriol/(9S.10R)-trans-cannabitriol/(9S.10R)-cis-cannabitriol/(9R.10S)-cis-cannabitriol/ethoxy-cannabitriolvarin/isocannabitriol (8.9-dihydroxy-delta-6a(10a)-tetrahydrocannabinol)   | 1.4E+05                |
| 9    | 258.1622   | C17 H22 O2                               | 8.59                     | Cannabidiorcol/delta-9-trans-<br>tetrahydrocannabiorcol/cannabiorcitran/cannabi<br>orcicyclol/cannabiorcichromene  | 2.1E+05                |
| 10   | 258.1622   | C17 H22 O2                               | 10.42                    | Cannabidiorcol/delta-9-trans-<br>tetrahydrocannabiorcol/cannabiorcitran/cannabi<br>orcicyclol/cannabiorcichromene  | 1.9E+05                |
| 11   | 330.2559   | C22 H34 O2                               | 10.77                    | O-Methylcannabigerol   | 1.5E+05                |
| 12   | 314.2252   | C21 H30 O2                               | 11.05                    | Cannabicitran/(-)-delta9-cis-(6aS.10aR)-delta9-tetrahydrocannabinol/(â')-delta7 -trans-(1R. 3R. 6R)-isotetrahydrocannabinol-C5/cannabigeroquinone  | 2.4E+05                |

Table IV - continuation: Overview of compounds detected in ESI+ (corresponding with the Figure 5)

| Cmp.<br>number | Measured exact mass <sup>a</sup> (neutral, monoisotopical) | Estimated<br>elemental<br>formula <sup>b</sup> | RT <sup>c</sup><br>(min) | Tentative identity (name of possible compounds) <sup>d</sup>  | Peak area <sup>e</sup> |
|----------------|--|--|--------------------------|---|------------------------|
| 13             | 314.2250   | C21 H30 O2                                     | 11.75                    | Cannabicitran/(-)-delta9-cis-(6aS.10aR)-delta9-tetrahydrocannabinol/(â')-delta7 -trans-(1R. 3R. 6R)-isotetrahydrocannabinol-C5/cannabigeroquinone | 6.0E+05                |

- Mass error compared the theoretical exact mass < 5 ppm</li>
- b Match of isotopic pattern confirmed
- c Retention time
- Tentative identification of compounds based on available scientific articles (Hanuš et al. 2016, Mechoulam 2002); possible identities are separated by the symbol "/"
- e Peak area related to the undiluted sample prepared according to stated procedure

**Table V:** Overview of compounds detected in ESI- (corresponding with the Figure 6)

| Cmp. | Measured exact<br>mass <sup>a</sup> (neutral,<br>monoisotopical) | Estimated<br>elemental<br>formula <sup>b</sup> | RT <sup>c</sup><br>(min) | Tentative identity (name of possible compounds) <sup>d</sup>   | Peak area <sup>e</sup> |
|------|--|--|--------------------------|--|------------------------|
| 1    | 330.1822   | C20 H26 O4                                     | 5.69                     | Cannabichromevarinic acid/delta-9-<br>tetrahydrocannabivarinic acid  | 4.3E+04                |
| 2    | 282.1617   | C19 H22 O2                                     | 6.46                     | Cannabinodivarin/cannabivarin/demethyldecarb oxyamorfrutin A/63b/63c   | 7.4E+05                |
| 3    | 328.2036   | C21 H28 O3                                     | 6.46                     | Cannabichromanone- D/cannabicoumaronone/10-oxo-delta-6a(10a)- tetrahydrocannabinol/8-Oxo-delta9-trans- tetrahydrocannabinol/9.10- Anhydrocannabitriol/anhydrocannabimovone/Ca nnabidiol Hydroxyquinone   | 2.7E+05                |
| 4    | 374.2091   | C22 H30 O5                                     | 6.47                     | Cannabielsoic acid A/cannabielsoic acid B  | 1.3E+06                |
| 5    | 332.2344   | C21 H32 O3                                     | 6.71                     | rac-6'-Epoxycannabigerol (2'S*. 3'R*)/rac-6'-<br>epoxycannabigerol (2'R*. 3'R*)/(-)-7-<br>Hydroxycannabichromane   | 2.5E+05                |
| 6    | 348.2293   | C21 H32 O4                                     | 6.81                     | Cannabiripsol  | 1.3E+05                |
| 7    | 258.1619   | C17 H22 O2                                     | 6.93                     | Cannabidiorcol/delta-9-trans-<br>tetrahydrocannabiorcol/cannabiorcitran/cannabi<br>orcicyclol/cannabiorcichromene  | 1.1E+05                |
| 8    | 374.2092   | C22 H30 O5                                     | 7.02                     | Cannabielsoic acid A/cannabielsoic acid B  | 3.7E+05                |
| 9    | 358.2138   | C22 H30 O4                                     | 7.14                     | Ferruginene A/ferruginene B/delta-9-<br>tetrahydrocannabinolic acid B/delta-8-<br>tetrahydrocannabinolic acid  | 5.4E+04                |
| 10   | 330.2188   | C21 H30 O3                                     | 7.15                     | 8'-Hydroxyisocannabichromene/ cannabielsoin/abnormal cannabigeroquinol/10alpha-hydroxy trans delta- 8-tetrahydrocannabinol/10 beta-hydroxy trans delta-8-tetrahydrocannabinol/8 alpha-hydroxy- delta9-trans-tetrahydrocannabinol/8 beta- hydroxy-delta9-trans- tetrahydrocannabinol/tetrahydrocannabinol epoxide/hydroxy delta9.11-hexahydrocannabinol | 9.9E+05                |
| 11   | 348.2290   | C21 H32 O4                                     | 7.38                     | Cannabiripsol  | 5.0E+04                |
| 12   | 318.1829   | C19 H26 O4                                     | 7.49                     | (9S.10S)-trans-Cannabitriol-C3/(9R.10R)-trans-<br>cannabitriol-C3  | 3.1E+04                |
| 13   | 332.1989   | C20 H28 O4                                     | 7.50                     | Cannabichromanone/cannabigerovarinic acid  | 2.7E+04                |
| 14   | 310.1929   | C21 H26 O2                                     | 7.64                     | Cannabinodiol/cannabifuran   | 2.5E+05                |
| 15   | 314.2245   | C21 H30 O2                                     | 7.79                     | Cannabicitran/(-)-delta9-cis-(6aS.10aR)-delta9-<br>tetrahydrocannabinol/(â')-delta7 -trans-(1R. 3R.<br>6R)-isotetrahydrocannabinol-<br>C5/cannabigeroquinone   | 3.1E+05                |
| 16   | 300.2083   | C20 H28 O2                                     | 8.10                     | delta-9-Tetrahydrocannabinol-C4/norCannabidiol   | 9.0E+05                |
| 17   | 282.1618   | C19 H22 O2                                     | 8.15                     | Cannabinodivarin/cannabivarin/demethyldecarb oxyamorfrutin A/63b/63c   | 8.0E+04                |
| 18   | 258.1617   | C17 H22 O2                                     | 8.17                     | Cannabidiorcol/delta-9-trans-<br>tetrahydrocannabiorcol/cannabiorcitran/cannabi<br>orcicyclol/cannabiorcichromene  | 5.7E+04                |

Table V - continuation: Overview of compounds detected in ESI- (corresponding with the Figure 6)

| Cmp. | Measured exact mass <sup>a</sup> (neutral, monoisotopical) | Estimated elemental formula <sup>b</sup> | RT <sup>c</sup><br>(min) | Tentative identity (name of possible compounds) <sup>d</sup>   | Peak area <sup>e</sup> |
|------|--|--|--------------------------|--|------------------------|
| 19   | 332.2345   | C21 H32 O3                               | 8.37                     | rac-6'-Epoxycannabigerol (2'S*. 3'R*)/rac-6'-<br>epoxycannabigerol (2'R*. 3'R*)/(-)-7-<br>Hydroxycannabichromane   | 3.5E+05                |
| 20   | 308.1774   | C21 H24 O2                               | 8.44                     | Dehydrocannabifuran  | 9.9E+04                |
| 21   | 348.2288   | C21 H32 O4                               | 8.44                     | Cannabiripsol  | 1.5E+05                |
| 22   | 288.2081   | C19 H28 O2                               | 8.45                     | Cannabigerovarin   | 9.5E+04                |
| 23   | 346.2141   | C21 H30 O4                               | 8.58                     | Trans-10-ethoxy-9-hydroxy-delta6a(10a)-tetrahydrocannabivarin-C3/cannabimovone/(+)-(9S.10S)-trans-cannabitriol/(9S.10R)-cis-cannabitriol/(9R.10S)-cis-cannabitriol/ethoxy-cannabitriolvarin/isocannabitriol (8.9-dihydroxy-delta-6a(10a)-tetrahydrocannabinol)   | 1.7E+06                |
| 24   | 332.2346   | C21 H32 O3                               | 8.59                     | rac-6'-Epoxycannabigerol (2'S*. 3'R*)/rac-6'-<br>epoxycannabigerol (2'R*. 3'R*)/(-)-7-<br>Hydroxycannabichromane   | 1.9E+05                |
| 25   | 332.2347   | C21 H32 O3                               | 8.84                     | rac-6'-Epoxycannabigerol (2'S*. 3'R*)/rac-6'-<br>epoxycannabigerol (2'R*. 3'R*)/(-)-7-<br>Hydroxycannabichromane   | 3.5E+05                |
| 26   | 316.2401   | C21 H32 O2                               | 8.85                     | Cannabinerol/abnormal cannabigerol/hexahydrocannabinol   | 1.2E+06                |
| 27   | 372.2297   | C23 H32 O4                               | 8.90                     | (+/-)-4-Acetoxycannabichromene/acetyl<br>cannabigeroquinol/7.8-dehydro-10-O-<br>ethylcannabitriol/   | 1.6E+05                |
| 28   | 286.1929   | C19 H26 O2                               | 9.20                     | (delta)-7 -trans-(1R. 3R. 6R)- isotetrahydrocannabivarin-C3 (?7-trans- Isotetrahydrocannabivarin)/(1aS.3aR.8bR.8cR)- Cannabicyclovarin/Cannabivarichromene ((RS)- Cannabichromevarin)/delta-9-trans- tetrahydrocannabivarin/2-Methyl-2-(4-methyl-2- pentenyl)-7-propyl-2H-1-benzopyran-5-ol/delta7- 1.2-cis-(1R.3R.6S)-Isotetrahydrocannabivarin-C3 (?7-cis-Isotetrahydrocannabivarin)/delta7-1.2-cis- (1S.3S.6R)-Isotetrahydrocannabivarin-C3/delta 9- cis-Tetrahydrocannabidivarin | 2.3E+05                |
| 29   | 316.2390   | C21 H32 O2                               | 9.30                     | Cannabinerol/abnormal cannabigerol/hexahydrocannabinol   | 2.3E+05                |
| 30   | 268.1467   | C18 H20 O2                               | 9.31                     | Cannabinol-C2/56a/63a  | 2.3E+04                |
| 31   | 314.2241   | C21 H30 O2                               | 9.43                     | Cannabicitran/(-)-delta9-cis-(6aS.10aR)-delta9-tetrahydrocannabinol/(â')-delta7 -trans-(1R. 3R. 6R)-isotetrahydrocannabinol-C5/cannabigeroquinone  | 3.9E+05                |
| 32   | 374.2451   | C23 H34 O4                               | 9.43                     | (-)-(9R.10R)-trans-10-O-Ethylcannabitriol/5-<br>acetyl-4-hydroxycannabigerol/acetyl abnormal<br>cannabigeroquinol/cannabigerolic acid<br>monomethylether   | 2.8E+05                |
| 33   | 342.2190   | C22 H30 O3                               | 9.51                     | Ferruginene C/2-formyl-delta9-trans-<br>tetrahydrocannabinol   | 3.2E+05                |

Table V - continuation: Overview of compounds detected in ESI- (corresponding with the Figure 6)

| Cmp.<br>number | Measured exact<br>mass <sup>a</sup> (neutral,<br>monoisotopical) | Estimated elemental formula <sup>b</sup> | RT <sup>c</sup><br>(min) | Tentative identity (name of possible compounds) <sup>d</sup>   | Peak area <sup>e</sup> |
|----------------|--|--|--------------------------|--|------------------------|
| 34             | 328.2037   | C21 H28 O3                               | 9.53                     | Cannabichromanone- D/cannabicoumaronone/10-oxo-delta-6a(10a)- tetrahydrocannabinol/8-Oxo-delta9-trans- tetrahydrocannabinol/9.10- Anhydrocannabitriol/anhydrocannabimovone/Ca nnabidiol Hydroxyquinone   | 5.8E+05                |
| 35             | 342.2545   | C23 H34 O2                               | 9.64                     | (-)-trans-9-<br>tetrahydrocannabiphorol/cannabidiphorol  | 4.5E+04                |
| 36             | 330.2192   | C21 H30 O3                               | 10.06                    | 8'-Hydroxyisocannabichromene/ cannabielsoin/abnormal cannabigeroquinol/10alpha-hydroxy trans delta- 8-tetrahydrocannabinol/10 beta-hydroxy trans delta-8-tetrahydrocannabinol/8 alpha-hydroxy- delta9-trans-tetrahydrocannabinol/8 beta- hydroxy-delta9-trans- tetrahydrocannabinol/tetrahydrocannabinol epoxide/hydroxy delta9.11-hexahydrocannabinol | 3.9E+04                |
| 37             | 372.2295   | C23 H32 O4                               | 10.11                    | (+/-)-4-Acetoxycannabichromene/acetyl<br>cannabigeroquinol/7.8-dehydro-10-O-<br>ethylcannabitriol/   | 7.8E+04                |
| 38             | 384.3021   | C26 H40 O2                               | 10.29                    | Sesquicannabigerol/O-propylcannabidiol/O-<br>pentyl-delta9-trans-tetrahydrocannabinol  | 4.2E+05                |
| 39             | 384.3019   | C26 H40 O2                               | 10.81                    | Sesquicannabigerol/O-propylcannabidiol/O-<br>pentyl-delta9-trans-tetrahydrocannabinol  | 2.7E+05                |
| 40             | 358.2140   | C22 H30 O4                               | 11.75                    | Ferruginene A/ferruginene B/delta-9-<br>tetrahydrocannabinolic acid B/delta-8-<br>tetrahydrocannabinolic acid  | 1.7E+05                |
| 41             | 640.4486   | C43 H60 O4                               | 12.57                    | Cannabisol   | 2.4E+06                |
| 42             | 686.4178   | C43 H58 O7                               | 12.98                    | cannabidiolic acid tetrahydrocannabitriol ester  | 5.9E+04                |
| 43             | 494.3386   | C32 H46 O4                               | 13.35                    | beta-Fenchyl delta 9 - tetrahydrocannabinolate/epi-bornyl delta 9 - tetrahydrocannabinolate/alpha -terpenyl delta 9 -tetrahydrocannabinolate/4-terpenyl delta 9 - tetrahydrocannabinolate/bornyl delta 9 - tetrahydrocannabinolate/alpha -fenchyl delta 9 - tetrahydrocannabinolate  | 1.4E+05                |

Mass error compared the theoretical exact mass < 5 ppm</p>

## B) Targeted screening of other (non-cannabinoid) biologically active compounds

In the tested samples, the following amounts of other (non-cannabinoid) biologically active compounds (**Table VI**) characterized by unique combination of exact mass and retention time RT were detected.

b Match of isotopic pattern confirmed

c Retention time

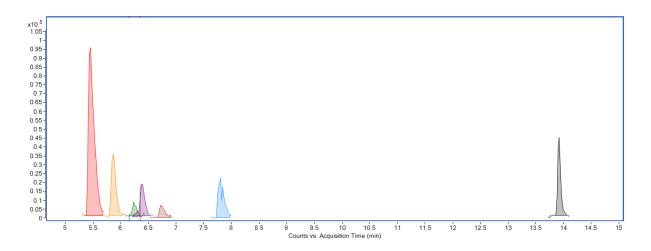
Tentative identification of compounds based on available scientific articles (Hanuš et al. 2016, Mechoulam 2002); possible identities are separated by the symbol "/"

Peak area related to the undiluted sample prepared according to stated procedure

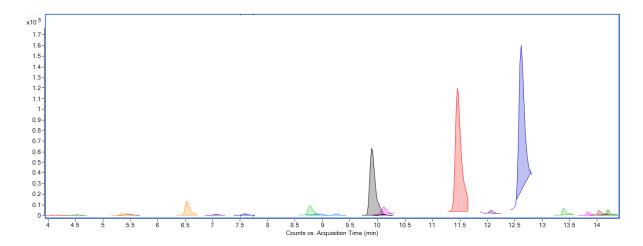
Table VI: Number of other biologically active compounds detected in the sample in ESI+ and ESI-

| Sample name | Number of other biologically active compounds detected in ESI+ | Number of other biologically active compounds detected in ESI- |  |  |
|-------------|--|--|--|--|
| ML 4909/21  | 7  | 20   |  |  |

Extracted ion chromatograms (XIC) of the detected compounds in both ionization modes (ESI+, ESI-) are documented on **Figures 7 - 8**. All detected non-cannabinoid biologically active compounds (tentative identification) are also summarized in **Table VII** (ESI+) and **Table VIII** (ESI-). Considering the possible existence of isomeric forms, one detected compound may have several identities.



**Figure 7:** ML 4909/21 - UHPLC-HRMS/MS extracted ion chromatogram of 7 compound with unique combination of exact mass and RT detected in ESI+ (obtained for undiluted sample)



**Figure 8:** ML 4909/21 - UHPLC-HRMS/MS extracted ion chromatogram of 20 compounds with unique combination of exact mass and RT detected in ESI- (obtained for undiluted sample)

Table VII: Overview of compounds detected in ESI+ (corresponding with the Figure 7)

| Cmp.<br>number | Measured exact mass <sup>a</sup> (neutral, monoisotopical) | Estimated elemental formula <sup>b</sup> | RT <sup>c</sup><br>(min) | Tentative identity (name of possible compounds) <sup>d</sup>   | Compound group                           | Peak area <sup>e</sup> |
|----------------|--|--|--------------------------|--|--|------------------------|
| 1              | 302.1158   | C17 H18 O5                               | 5.49                     | 4.5-dihydroxy-2.5-dihydroxy-2.3.6-<br>trimethoxy-9.10-<br>dihydrophenanthrene                            | new non-<br>cannabinoid<br>constituent f | 6.9E+05                |
| 2              | 272.1054   | C16 H16 O4                               | 5.86                     | cannithrene-2  | phenol                                   | 2.2E+05                |
| 3              | 220.1820   | C15 H24 O                                | 6.25                     | caryophyllene oxide  | terpenoid                                | 4.0E+04                |
| 4              | 316.1315   | C18 H20 O5                               | 6.39                     | 4-hydroxy-2.3.6.7-tetramethoxy-9   | new non-<br>cannabinoid<br>constituent f | 1.1E+05                |
| 5              | 222.1985   | C15 H26 O                                | 6.73                     | guajol / trans-nerolidol / gamma-<br>eudesmol / beta-eudesmol / alpha-<br>eudesmol / epi-alpha-bisabolol | terpenoid                                | 5.0E+04                |
| 6              | 436.1890   | C26 H28 O6                               | 7.81                     | cannflavin A / cannflavin C  | flavonoid                                | 1.7E+05                |
| 7              | 412.3701   | C29 H48 O                                | 13.91                    | stigmasterol   | phytosterol                              | 1.7E+05                |

- Mass error compared the theoretical exact mass < 5 ppm</li>
- b Match of isotopic pattern confirmed
- c Retention time
- Possible identities are separated by the symbol "/"
- Peak area related to the undiluted sample prepared according to stated procedure
- f Mohamed M. Radwan et al. 2008

Table VIII: Overview of compounds detected in ESI- (corresponding with the Figure 8)

| Cmp.<br>number | Measured exact mass <sup>a</sup> (neutral, monoisotopical) | Estimated elemental formula <sup>b</sup> | RT <sup>c</sup><br>(min) | Tentative identity (name of possible compounds) <sup>d</sup>        | Compound group                                      | Peak area <sup>e</sup> |
|----------------|--|--|--------------------------|---|---|------------------------|
| 1              | 188.1048   | C9 H16 O4                                | 4.15                     | azealic acid  | fatty acid  | 2.3E+06                |
| 2              | 242.0941   | C15 H14 O3                               | 4.51                     | isocannabispiradienone /<br>cannithrene-1                           | phenol  | 3.5E+04                |
| 3              | 246.1255   | C15 H18 O3                               | 5.33                     | cannabispiran / isocannabispiran                                    | phenol  | 1.2E+05                |
| 4              | 242.0940   | C15 H14 O3                               | 5.48                     | isocannabispiradienone /<br>cannithrene-1                           | phenol  | 1.0E+05                |
| 5              | 144.1151   | C8 H16 O2                                | 6.52                     | caprylic acid   | fatty acid  | 2.5E+07                |
| 6              | 158.1307   | C9 H18 O2                                | 7.04                     | pelargonic acid   | fatty acid  | 3.4E+06                |
| 7              | 172.1463   | C10 H20 O2                               | 7.58                     | capric acid   | fatty acid  | 4.0E+05                |
| 8              | 200.1777   | C12 H24 O2                               | 8.76                     | lauric acid   | fatty acid  | 9.9E+05                |
| 9              | 372.2296   | C23 H32 O4                               | 8.90                     | 5-acetoxy-6-geranyl-3-n-pentyl-1.4-<br>benzoquinone                 | new non-<br>cannabinoid<br>constituent <sup>f</sup> | 1.6E+05                |
| 10             | 276.2084   | C18 H28 O2                               | 9.24                     | stearidonic acid  | fatty acid  | 9.6E+04                |
| 11             | 278.2248   | C18 H30 O2                               | 9.90                     | alpha-linolenic acid / gamma-<br>linolenic acid / isolinolenic acid | fatty acid  | 4.5E+06                |
| 12             | 372.2294   | C23 H32 O4                               | 10.10                    | 5-acetoxy-6-geranyl-3-n-pentyl-1.4-<br>benzoquinone                 | new non-<br>cannabinoid<br>constituent <sup>f</sup> | 5.9E+04                |
| 13             | 228.2089   | C14 H28 O2                               | 10.11                    | myristic acid   | fatty acid  | 1.5E+05                |
| 14             | 256.2405   | C16 H32 O2                               | 11.46                    | palmitic acid   | fatty acid  | 6.9E+07                |
| 15             | 270.2557   | C17 H34 O2                               | 12.06                    | margaric acid   | fatty acid  | 2.0E+04                |
| 16             | 284.2719   | C18 H36 O2                               | 12.61                    | stearic acid  | fatty acid  | 1.0E+08                |
| 17             | 312.3024   | C20 H40 O2                               | 13.39                    | arachidic acid / isoarachidic acid                                  | fatty acid  | 1.0E+06                |
| 18             | 340.3335   | C22 H44 O2                               | 13.83                    | behenic acid  | fatty acid  | 5.3E+05                |
| 19             | 414.3849   | C29 H50 O                                | 14.04                    | beta-sitosterol   | phytosterol   | 2.6E+04                |
| 20             | 368.3647   | C24 H48 O2                               | 14.20                    | lignoceric acid   | fatty acid  | 1.2E+05                |

- Mass error compared the theoretical exact mass < 5 ppm</li>
- b Match of isotopic pattern confirmed
- c Retention time
- d Possible identities are separated by the symbol "/"
- e Peak area related to the undiluted sample prepared according to stated procedure
- f Mohamed M. Radwan et al. 2008

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End of the appendix