

# Process Development for GMP-Grade Full-Spectrum Cannabis Extract Oil: Towards Standardized Medicinal Use

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## Supplementary Materials

**Table S1.** Content of phenolics, flavonoids, chlorophyll, and waxes (% w/w) in Flower, SOMAÍ FECO, and Purified SOMAÍ FECO, highlighting the impact of extraction and purification on non-cannabinoid constituents.

| Content<br>(% w/w) | Flower<br>(dry base) | SOMAÍ FECO                   | Purified SOMAÍ FECO          |
|--------------------|----------------------|------------------------------|------------------------------|
| Phenolics          | 0.14±1               | 1.4±0.1                      | 1.4±0.1                      |
| Flavonoids         | 0.12±1               | 1.0±0.2                      | 1.1±0.3                      |
| Chlorophyll        | 3±1                  | 0.11±0.04 × 10 <sup>-3</sup> | 0.03±0.02 × 10 <sup>-3</sup> |
| Waxes              | 9.2 ± 3.1            | 4.1±1.2 × 10 <sup>-3</sup>   | 3.8 ± 0.4 × 10 <sup>-3</sup> |

**Table S2.** Quantification of terpenes (% w/w) in the high-THC flower, crude high-THC FECO extract (SOMAÍ FECO), purified high-THC FECO extract (Purified SOMAÍ FECO), and two final CBD/THC (10:10) oral solutions (OS) obtained by adding terpenes in controlled reintroduction.

| Terpenes           | Flower | SOMAÍ FECO | Purified SOMAÍ FECO | OS1     | OS2     |
|--------------------|--------|------------|---------------------|---------|---------|
| alpha-pinene       | 0.0241 | 0.0019     | ND                  | 0.0685  | 0.03814 |
| camphene           | 0.0066 | 0.0009     | ND                  | 0.00644 | 0.00894 |
| beta-pinene        | 0.0341 | 0.0049     | 0.00004             | 0.05754 | 0.06034 |
| myrcene            | 0.1332 | 0.0085     | 0.0006              | 0.58527 | 0.13955 |
| 3-carene           | 0.0002 | 0.0003     | 0.0001              | 0.00123 | 0.00031 |
| alpha-terpinene    | 0.0009 | 0.0007     | ND                  | 0.00175 | 0.00214 |
| cymene             | 0.0002 | ND         | ND                  | 0.00125 | 0.00114 |
| D.L-limonene       | 0.1699 | 0.0294     | 0.0004              | 0.31692 | 0.48473 |
| gamma-terpinene    | 0.0011 | 0.0005     | 0.0001              | 0.00182 | 0.00409 |
| terpinolene        | 0.0045 | 0.0035     | 0.00001             | 0.03621 | 0.01637 |
| L-fenchone         | 0.0048 | 0.0038     | ND                  | ND      | ND      |
| linalool           | 0.0477 | 0.0576     | 0.0006              | 0.05076 | 0.10022 |
| fenchol            | 0.0394 | 0.0603     | 0.0005              | 0.01658 | 0.02523 |
| camphor            | ND     | ND         | ND                  | 0.00004 | ND      |
| iso borneol        | 0.0004 | 0.0009     | 0.00001             | 0.00046 | 0.00039 |
| borneol            | 0.0124 | 0.0295     | 0.0004              | 0.00313 | 0.00428 |
| D.L-menthol        | ND     | 0.0003     | ND                  | 0.00016 | 0.00018 |
| alpha-terpineol    | 0.0399 | 0.1047     | 0.0012              | 0.0092  | 0.01486 |
| B-citronellol      | 0.0019 | 0.0043     | 0.0001              | 0.00044 | 0.00069 |
| R-pulegone         | ND     | ND         | ND                  | ND      | ND      |
| geraniol           | 0.0025 | 0.0104     | 0.0002              | 0.00062 | 0.00142 |
| geranyl acetate    | ND     | 0.0009     | ND                  | ND      | ND      |
| alpha-cedrene      | ND     | ND         | ND                  | 0.00298 | 0.00936 |
| beta-caryophellene | 0.2336 | 0.3324     | 0.0032              | 0.15994 | 0.43231 |
| alpha-humulene     | 0.0724 | 0.1169     | 0.0017              | 0.05095 | 0.1386  |
| nerolidol          | 0.0302 | 0.116      | 0.0252              | 0.00396 | 0.00875 |
| cedrol             | ND     | ND         | ND                  | ND      | ND      |
| beta-eudesmol      | 0.0282 | 0.112      | 0.0557              | 0.00619 | 0.00514 |
| alpha-bisabolol    | 0.0819 | 0.3026     | 0.1694              | 0.01868 | 0.01708 |
| phytol             | 0.0206 | 0.0133     | 0.032               | 0.00491 | 0.00619 |
| Total              | 0.9907 | 1.3165     | 0.29146             | 1.40593 | 1.52045 |

ND-not detected.

**Table S3.** Summary of the questions and results regarding the perception and acceptance of cannabis SOMA solutions for sample A and B.

| Question                                                                                                     | Sample A                                                     | Sample B                                |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------|
| Is the taste of the sample pleasant?                                                                         | Yes – 9<br>No – 3                                            | Yes – 8<br>No – 1<br>Indifferent – 3    |
| What tastes can you identify in the extract?                                                                 | Herbal – 11<br>Fruity – 1                                    | Herbal – 10<br>Other – 2                |
| Did you identify any taste that caused discomfort or immediate rejection?                                    | Indifferent – 1<br>No – 11                                   | No – 12                                 |
| Does any taste linger for a long time after consumption?                                                     | Yes – 5<br>No – 7                                            | No – 12                                 |
| Is this taste pleasant or unpleasant?                                                                        | Pleasant – 5<br>Indifferent – 7                              | Pleasant – 2<br>Indifferent – 10        |
| If you had to consume the oil daily, would the taste of the oil influence your decision to continue the use? | Yes – 3<br>No – 9                                            | Yes – 3<br>No – 9                       |
| Describe the acceptance of the sample                                                                        | Very acceptable – 7<br>Indifferent – 2<br>Not acceptable – 3 | Very acceptable – 10<br>Indifferent – 2 |

**Table S4.** Summary of the questions and results regarding the perception and acceptance of cannabis solutions for sample C and D.

| Question                                                                                                     | Sample C                                                     | Sample D                                                     |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|
| Is the taste of the sample pleasant?                                                                         | Yes – 4<br>Indifferent – 2<br>No – 1                         | Yes – 1<br>Indifferent – 3<br>No – 3                         |
| What tastes can you identify in the extract?                                                                 | Herbal – 6<br>Other – 1                                      | Herbal – 4<br>Other – 2                                      |
| Did you identify any taste that caused discomfort or immediate rejection?                                    | No – 7                                                       | Yes – 2<br>Indifferent – 4<br>No – 1                         |
| Does any taste linger for a long time after consumption?                                                     | Yes – 3<br>No – 4                                            | Yes – 3<br>No – 4                                            |
| Is this taste pleasant or unpleasant?                                                                        | Pleasant – 2<br>Indifferent – 4<br>Unpleasant – 1            | Indifferent – 4<br>Unpleasant – 3                            |
| If you had to consume the oil daily, would the taste of the oil influence your decision to continue the use? | Yes – 1<br>Indifferent – 1<br>No – 5                         | Yes – 2<br>Indifferent – 1<br>No – 4                         |
| Describe the acceptance of the sample                                                                        | Very acceptable – 5<br>Indifferent – 1<br>Not Acceptable – 1 | Very acceptable – 2<br>Indifferent – 3<br>Not Acceptable – 1 |