The preservation of volatile terpenes in cannabis inflorescence

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Supplemental Materials
**Supplemental Table I.** Profile of external terpene mixture

| Terpene           | %(w/w) |  |
|-------------------|--------|--|
| β-Myrcone         | 34.3   |  |
| β-Caryophyllene   | 13.7   |  |
| Linalool          | 12.7   |  |
| α-(−)-Bisabolol   | 12.7   |  |
| D-Limonene        | 9.8    |  |
| α-Humulene        | 8.8    |  |
| α-Terpineol       | 4.9    |  |
| β-Pinene          | 2.9    |  |

**Supplemental Table II.** Site One instrument parameters

| HS Parameter                | Setting      |
|-----------------------------|--------------|
| Oven Temperature            | 150°C        |
| Sample Line Temperature     | 150°C        |
| Transfer Line Temperature   | 150°C        |
| Pressurizing Gas Pressure   | 50.0 kPA     |
| Equilibrating Time          | 30 min.      |
| Pressurizing Time           | 1 min.       |
| Pressure Equilibrium Time   | 0.2 min.     |
| Load Time                   | 1 min.       |
| Load Equilibration Time     | 0.2 min.     |
| Injection Time              | 1.0 min.     |
| Needle Flush                | 1.0 min.     |

| GC Parameters               | Setting      |
|-----------------------------|--------------|
| Oven Temperature            | 80°C         |
| Injection Mode              | Split        |
| Carrier Gas                 | He           |
| Flow Control Mode           | Pressure     |
| Pressure                    | 92.9 kPA     |
| Total Flow                  | 17.4 mL/min  |
| Column Flow                 | 1.31 mL/min  |
| Linear Velocity             | 42.2 cm/sec  |
| Purge Flow                  | 3.0 mL/min   |
**Supplemental Table III.** Site One terpene scope of the HS GC-MS method. 42-part standard contained all terpenes at 100 µg/mL.

| Terpene                                | CAS#      |
|-----------------------------------------|-----------|
| α-(−)-Bisabolol                         | 23089-26-1|
| (−)-Caryophyllene Oxide                 | 1139-30-6 |
| (−)-Isopulegol                          | 89-79-2   |
| (+)-Cedrol                              | 77-53-2   |
| (+)-Fenchone                            | 4695-62-9 |
| (1S)-(−)-3-Carene                       | 498-15-7  |
| β-Myrcene                               | 123-35-3  |
| Camphene                                | 79-92-5   |
| Camphor                                 | 76-22-2   |
| cis-Nerolidol                           | 3790-78-1 |
| Eucalyptol                              | 470-82-6  |
| Farnesene (mix of isomers)              | 502-61-4  |
| Geranyl Acetate                         | 105-87-3  |
| Hexahydrothymol                         | 89-78-1   |
| Isoborneol                              | 124-76-5  |
| Linalool                                | 78-70-6   |
| Nerol                                   | 106-25-2  |
| Ocimene (Mixture of Isomers)            | 13877-91-3|
| p-Mentha-1,5-diene                      | 99-83-2   |
| β-Caryophyllene (trans-Caryophyllene)   | 87-44-5   |
| Valencene                               | 4630-07-3 |
| (−)-Borneol                             | 464-45-9  |
| (+)-Borneol                             | 464-43-7  |
| (+)-Pulegona                            | 89-82-7   |
| (1R)-(−)-Camphor                        | 464-49-3  |
| (1R)-Endo-(−)-Fenchyl Alcohol           | 2217-02-9 |
| (1S)-(−)-Camphor                        | 464-48-2  |
| (R)-(−)-Limonene (D-Limonene)           | 5989-27-5 |
| α-Cedrene                               | 469-61-4  |
| α-Humulene                              | 6753-98-6 |
| α-Terpinene                             | 99-86-5   |
| α-Pinene                                | 80-56-8   |
| β-Pinene                                | 127-91-3  |
| γ-Terpinene                             | 99-85-4   |
| Geraniol                                | 106-24-1  |
| Guaiol                                  | 489-86-1  |
| L(−)-Fenchone                           | 7787-20-4 |
| Sabinene                                | 3387-41-5 |
| Sabinene Hydrate                        | 546-79-2  |
| Terpineol (mixture of Isomers)          | 8000-41-7 |
| Terpinolene                             | 586-62-9  |
| trans-Nerolidol                         | 40716-66-3|
Supplemental Figure 1. Calibration curves used for quantitative determination of α-pinene and β-myrcene from Site One experiments.
### Supplemental Table IV. Initial terpene profile of aged one-year and aged one-month DjG samples and their differences in terpene composition

| Terpene           | % of Profile | % Difference |
|-------------------|--------------|--------------|
|                   | Aged One-Year DjG | Aged One-Month DjG |
| β-Myrcene         | 13.8         | 36.0         | 89.4 |
| β-Caryophyllene   | 21.5         | 23.8         | 10.3 |
| D-Limonene        | 14.3         | 15           | 4.6  |
| Valencene         | 4.1          | 6.8          | 48.7 |
| β-Pinene          | 8.0          | 5.6          | 35.1 |
| α-Humulene        | 6.0          | 4.7          | 23.7 |
| Linalool          | 11.7         | 3.8          | 101.8|
| α-Pinene          | 9.1          | 3.3          | 93.2 |
| Camphene          | 2.0          | 1.0          | 69.7 |
| α-Terpineol       | 6.2          | 0.0          | 200  |
| β-Farnesene       | 1.9          | 0.0          | 200  |
| Trans-Nerolidol   | 1.6          | 0.0          | 200  |
| **Average**       |              |              | **89.7** |
| **Weighted Average** |            |              | **55.8** |

### Supplemental Table V. Terpene profile after four weeks of storage in the presence of the 8-part mixture for aged one-year DjG and aged one-month DjG samples and their corresponding % difference

| Terpene           | % of Profile | % Difference |
|-------------------|--------------|--------------|
|                   | Aged One-Year DjG | Aged One-Month DjG |
| β-Myrcene         | 49           | 46.7         | 4.8  |
| β-Caryophyllene   | 5.9          | 6.5          | 9.7  |
| Linalool          | 11.5         | 12.9         | 11.5 |
| α-(-)-Bisabolol   | 0.0          | 5.8          | 200  |
| D-Limonene        | 17.5         | 14.1         | 21.5 |
| α-Humulene        | 1.6          | 1.9          | 17.1 |
| α-Terpineol       | 5.6          | 5.3          | 5.5  |
| β-Pinene          | 8.3          | 6.8          | 19.9 |
| α-Pinene          | 0.4          | 0.0          | 200  |
| Camphene          | 0.3          | 0.0          | 200  |
| **Average**       |              |              | **69.0** |
| **Weighted Average** |            |              | **16.3** |
## Supplemental Table VI

Comparing agreement of terpene profiles from Cream Carmel (Cre) samples. Terpene profile compared at two and four weeks of aging for samples stored in the absence and presence of external volatiles. Samples stored in the presence of external volatiles are an average of the four external terpene concentrations. Corresponding % difference between the samples are reported.

| Terpene          | Cre Sample, % of Profile | 2 Week – Control | 4 Week – Control | % Difference | Cre Sample, % of Profile | 2 Weeks – With External Terpenes | 4 Weeks – With External Terpenes | % Difference |
|------------------|-------------------------|-----------------|-----------------|--------------|-------------------------|---------------------------------|---------------------------------|--------------|
| α-Pinene         | 3.0                     | 4.1             | 29.6            | 12.9         | 14.4                    | 10.6                            |
| Camphene         | 1.5                     | 1.4             | 10.7            | 1.0          | 1.5                     | 34.7                            |
| β-Pinene         | 3.0                     | 4.1             | 29.6            | 4.4          | 4.7                     | 7.6                             |
| β-Myrcene        | 4.5                     | 5.4             | 18.0            | 12.3         | 8.1                     | 41.6                            |
| (1S)-3-Carene    | 0.0                     | 0.0             | N/A             | 0.1          | 0.0                     | 200                             |
| D-Limonene       | 18.0                    | 28.4            | 44.5            | 17.2         | 18.7                    | 8.3                             |
| Ocimene          | 4.5                     | 0.0             | 200             | 3.2          | 0.0                     | 200                             |
| Sabinene Hydrate | 0.0                     | 0.0             | N/A             | 0.6          | 0.6                     | 0.4                             |
| Terpinolene      | 0.0                     | 0.0             | N/A             | 0.3          | 0.3                     | 15.5                            |
| Linolool         | 6.0                     | 5.4             | 10.7            | 12.8         | 13.5                    | 5.7                             |
| Fenchol          | 3.8                     | 5.4             | 35.9            | 2.4          | 2.4                     | 0.2                             |
| Terpineol        | 5.3                     | 6.8             | 24.9            | 3.2          | 3.5                     | 8.1                             |
| Nerol            | 1.5                     | 0.0             | 200             | 0.6          | 0.0                     | 200.0                           |
| Geraniol         | 2.3                     | 1.4             | 50.1            | 1.2          | 0.6                     | 56.7                            |
| β-Caryophyllene  | 24.1                    | 18.9            | 23.9            | 13.2         | 12.7                    | 4.0                             |
| α-Humulene       | 7.5                     | 5.4             | 32.7            | 2.1          | 1.9                     | 13.6                            |
| Valencene        | 1.5                     | 0.0             | 200             | 0.3          | 0.1                     | 79.9                            |
| trans-Nerolidol  | 1.5                     | 0.0             | 200             | 0.0          | 0.0                     | N/A                             |
| Caryophyllene oxide | 1.5                   | 0.0             | 200             | 6.0          | 10.5                    | 54.1                            |
| Guaiol           | 0.0                     | 2.7             | 200             | 1.5          | 1.3                     | 11.3                            |
| β-eudesmol       | 2.3                     | 4.1             | 57.0            | 1.8          | 1.9                     | 9.6                             |
| α-(-)-Bisabolol  | 8.3                     | 6.8             | 20.1            | 3.0          | 3.3                     | 10.1                            |
| **Average**      | **83.6%**               |                 |                 |              | **Average**             | **46.3%**                       |
| **Weighted Average** | **41.9%**             |                 |                 |              | **Weighted Average**     | **19.5%**                       |

N/A = Not applicable. Terpenes not present in the profile were not averaged.