

**Supplementary Table S1.** Target gas flow and dilution ratio for dilution levels

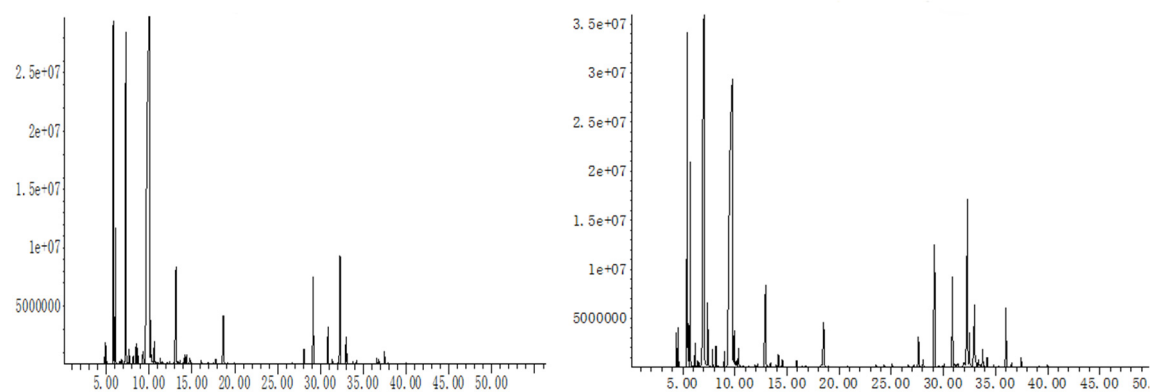
| Dilution level | Odorous air flow (μL/min) | Carrier flow (L/min) | Dilution ratio |
|----------------|---------------------------|----------------------|----------------|
| 1              | 0.31                      | 20.0                 | 64000          |
| 2              | 0.63                      | 20.0                 | 32000          |
| 3              | 1.25                      | 20.0                 | 16000          |
| 4              | 2.50                      | 20.0                 | 8000           |
| 5              | 5.00                      | 20.0                 | 4000           |
| 6              | 10.0                      | 20.0                 | 2000           |
| 7              | 20.0                      | 20.0                 | 1000           |
| 8              | 40.0                      | 20.0                 | 500            |
| 9              | 80.0                      | 20.0                 | 250            |
| 10             | 160                       | 20.0                 | 125            |
| 11             | 320                       | 20.0                 | 63             |
| 12             | 630                       | 20.0                 | 32             |
| 13             | 1250                      | 20.0                 | 16             |
| 14             | 2500                      | 20.0                 | 8              |

**Supplementary Table S2.** A single concentration of each major component in green huajiao

| No. | Name                           | Concentration (mg/kg) |                 |                 |                 |                 |                 |                 |
|-----|--------------------------------|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|     |                                | G1                    | G2              | G3              | G4              | G5              | G6              | G7              |
| 1   | sabinene                       | 2664.80±8.70          | 1269.05±5.51    | 1397.65±15.51   | 3762.00±112.98  | 1895.73±52.93   | 1724.87±3.13    | 588.53±42.63    |
| 2   | ( + ) -limonene                | 6223.59±85.80         | 3705.97±332.95  | 2647.15±191.64  | 7274.59±218.95  | 4006.22±625.79  | 4950.58±74.56   | 1580.80±9.87    |
| 3   | α-pinene                       | 75.21±6.50            | 47.58±6.05      | 38.90±4.97      | 48.63±0.20      | 38.09±16.61     | 44.30±3.28      | 17.49±4.47      |
| 4   | trans caryophyllene            | 1406.61±19.09         | 1312.46±70.78   | 1723.94±144.19  | 1452.75±119.19  | 1159.25±150.93  | 2668.28±191.16  | 2705.32±137.37  |
| 5   | α-caryophyllene                | 631.71±1.73           | 584.88±36.37    | 907.68±82.43    | 600.47±40.98    | 545.32±64.25    | 1546.67±12.50   | 865.35±53.27    |
| 6   | germacrened                    | 1791.53±12.05         | 2375.11±153.92  | 3394.64±300.22  | 2342.28±156.39  | 1885.22±88.14   | 3172.84±36.90   | 4615.51±47.22   |
| 7   | bicyclic macrobutylene         | 326.81±10.27          | 523.79±37.16    | 653.57±59.40    | 466.47±26.06    | 256.94±65.09    | 1287.28±61.42   | 1963.58±13.94   |
| 8   | baichangene                    | 293.44±17.12          | 70.76±7.43      | 100.79±16.34    | 72.21±2.20      | 127.24±14.27    | 123.02±13.15    | 230.02±36.68    |
| 9   | phellandrene                   | 22.03±1.27            | 23.69±12.91     | 13.02±0.97      | 21.57±7.77      | 12.57±4.99      | 34.81±4.50      | 11.44±4.41      |
| 10  | terpinolene                    | 33.50±5.68            | 31.38±8.75      | 33.80±0.79      | 40.26±11.48     | 24.90±5.98      | 37.06±1.53      | 27.31±1.60      |
| 11  | ocimene                        | 126.57±0.82           | 145.50±33.94    | 116.47±3.19     | 185.03±46.35    | 76.15±18.23     | 158.08±18.93    | 63.42±7.71      |
| 12  | γ-terpinene                    | 83.42±4.50            | 71.66±16.28     | 73.57±4.32      | 107.76±33.72    | 51.32±14.37     | 98.07±11.21     | 60.05±2.59      |
| 13  | α-terpinene                    | 661.00±6.06           | 264.05±21.32    | 306.34±29.04    | 279.60±2.80     | 441.39±8.12     | 194.24±6.33     | 624.47±15.37    |
| 14  | linalool                       | 55731.37±33.53        | 53411.70±508.20 | 63596.05±751.40 | 50022.73±366.69 | 68422.44±565.66 | 51682.42±896.97 | 70048.80±229.68 |
| 15  | terpinen-4-ol                  | 302.84±16.28          | 188.26±19.51    | 96.96±1.77      | 210.63±8.83     | 128.09±19.64    | 159.26±11.39    | 131.48±12.88    |
| 16  | α-terpineol                    | 344.05±16.55          | 243.81±26.91    | 320.04±14.38    | 248.73±9.37     | 279.73±14.76    | 384.05±3.62     | 307.45±1.72     |
| 17  | myrcene                        | 818.22±7.40           | 807.93±64.49    | 434.61±31.45    | 1140.87±47.89   | 663.87±0.69     | 532.01±1.99     | 203.72±19.33    |
| 18  | thujone                        | 582.40±21.36          | 520.93±16.68    | 577.82±40.85    | 592.51±17.11    | 776.27±7.64     | 563.61±33.32    | 193.27±30.06    |
| 19  | ningketone                     | 396.72±25.63          | 322.49±15.34    | 351.94±22.74    | 295.93±38.13    | 355.48±61.17    | 281.48±45.64    | 107.36±8.12     |
| 20  | 4-isopropylcyclohex-2-en-1-one | 201.72±7.90           | 105.15±10.52    | 93.16±7.40      | 117.30±0.14     | 398.71±5.41     | 96.90±3.39      | 274.65±36.02    |
| 21  | carvone                        | 130.97±0.14           | 73.06±5.51      | 34.44±3.76      | 50.77±6.18      | 234.48±3.88     | 19.66±0.61      | 166.69±2.99     |
| 22  | carveol                        | 114.89±4.90           | 99.27±13.34     | 84.55±4.82      | 111.60±7.91     | 140.92±0.47     | 170.02±9.12     | 89.05±1.98      |
| 23  | linalyl acetate                | 1790.40±77.14         | 2825.73±250.21  | 2250.37±153.58  | 2625.17±138.01  | 2639.51±315.35  | 1883.85±81.87   | 782.47±4.16     |
| 24  | tetradecane                    | 136.17±0.75           | 104.91±3.26     | 242.76±25.64    | 155.12±14.60    | 188.21±9.73     | 89.66±5.42      | 159.03±16.05    |
| 25  | cetane                         | 175.97±7.52           | 177.92±6.44     | 344.89±40.28    | 198.86±6.90     | 275.93±44.67    | 156.99±2.36     | 479.90±50.28    |
| 26  | caryophyllene oxide            | 124.82±29.81          | 49.68±2.46      | 65.24±7.14      | 63.67±0.53      | 207.22±45.70    | 58.18±3.89      | 310.44±21.20    |
| 27  | trans-linalool oxide           | 651.45±10.98          | 284.78±2.92     | 312.07±36.30    | 291.26±26.87    | 1281.63±71.69   | 184.93±8.92     | 645.03±20.03    |

**Supplementary Table S3.** Odor thresholds and aroma descriptions of key aroma substances

| No. | Name                   | CAS         | Chemical formula                               | Thresholds (mg/kg) | Aroma descriptions                            |
|-----|------------------------|-------------|------------------------------------------------|--------------------|-----------------------------------------------|
| L1  | $\alpha$ -pinene       | 000080-56-8 | C <sub>10</sub> H <sub>16</sub>                | 0.014              | spice, herbal flavor                          |
| L2  | sabinene               | 003387-41-5 | C <sub>10</sub> H <sub>16</sub>                | 0.98               | pepper, pine oil aroma                        |
| L3  | $\beta$ -pinene        | 000127-91-3 | C <sub>10</sub> H <sub>16</sub>                | 0.14               | pinewood, resinous incense                    |
| L4  | myrcene                | 000123-35-3 | C <sub>10</sub> H <sub>16</sub>                | 0.015              | flowery                                       |
| L5  | phellandrene           | 000099-83-2 | C <sub>10</sub> H <sub>16</sub>                | 0.04               | Citrus aroma, mint flavor, black pepper aroma |
| L6  | terpinolene            | 000586-62-9 | C <sub>10</sub> H <sub>16</sub>                | 0.2                | turpentine                                    |
| L7  | p-cymene               | 000099-87-6 | C <sub>10</sub> H <sub>14</sub>                | 0.12               | moist and moldy rag smell                     |
| L8  | (+)-limonene           | 000138-86-3 | C <sub>10</sub> H <sub>16</sub>                | 0.2                | citrusy fragrance                             |
| L9  | 1,8-cineole            | 000470-82-6 | C <sub>10</sub> H <sub>18</sub> O              | 0.064              | turpentine, herbal flavor                     |
| L10 | ocimene                | 013877-91-3 | C <sub>10</sub> H <sub>16</sub>                | 0.055              | sweet, vanilla fragrance                      |
| L11 | $\gamma$ -terpinene    | 000099-85-4 | C <sub>10</sub> H <sub>16</sub>                | 1                  | turpentine, herbal flavor                     |
| L12 | trans-linalool oxide   | 034995-77-2 | C <sub>10</sub> H <sub>18</sub> O <sub>2</sub> | 0.32               | flowery                                       |
| L13 | $\alpha$ -terpinene    | 00099-86-5  | C <sub>10</sub> H <sub>16</sub>                | 0.2                | pine resin, mild woody fragrance              |
| L14 | linalool               | 000078-70-6 | C <sub>10</sub> H <sub>18</sub> O              | 1.082              | floral, green, woody and sweet aromas         |
| L15 | thujone                | 000546-80-5 | C <sub>10</sub> H <sub>16</sub> O              | 0.36               | mint fragrance                                |
| L16 | (+)-citronellal        | 002385-77-5 | C <sub>10</sub> H <sub>18</sub> O              | 0.025              | cucumber fragrance                            |
| L17 | terpinen-4-ol          | 000562-74-3 | C <sub>12</sub> H <sub>16</sub> O <sub>3</sub> | 1.2                | huajiao, sweet and pine oil aroma             |
| L18 | $\alpha$ -terpineol    | 000098-55-5 | C <sub>10</sub> H <sub>14</sub> O              | 1.2                | citrusy fruit, mint flavor                    |
| L19 | carveol                | 000099-48-9 | C <sub>10</sub> H <sub>16</sub> O              | 4                  | retaining orchid flavor                       |
| L20 | cuminaldehyde          | 000122-03-2 | C <sub>10</sub> H <sub>14</sub> O              | 0.4                | strong scent of kukui oil and grass           |
| L21 | carvone                | 000099-49-0 | C <sub>12</sub> H <sub>20</sub> O <sub>2</sub> | 0.027              | retaining orchid flavor                       |
| L22 | linalyl acetate        | 000115-95-7 | C <sub>9</sub> H <sub>14</sub>                 | 1                  | citrusy fruit aroma                           |
| L23 | (-)- $\alpha$ -copaene | 003856-25-5 | C <sub>15</sub> H <sub>24</sub>                | 0.274              | spice, herbal flavor                          |
| L24 | tetradecane            | 000629-59-4 | C <sub>14</sub> H <sub>30</sub>                | 1                  | — —                                           |
| L25 | trans-caryophyllene    | 000087-44-5 | C <sub>15</sub> H <sub>24</sub>                | 1.54               | spicy, woody, citrusy aroma                   |
| L26 | trans-nerolidol        | 040716-66-3 | C <sub>15</sub> H <sub>26</sub> O              | 0.25               | grass, flower and woody fragrance             |
| L27 | caryophyllene oxide    | 001139-30-6 | C <sub>15</sub> H <sub>24</sub> O              | 5.5                | — —                                           |



**Supplementary Figure S1.** Representative GC chromatograms of green huajiao sample.

( The GC diagrams of green huajiao from Miyipuwei green huajiao in Panzhihua City, Sichuan Province and green huajiao in Jiangjin District, Chongqing City, respectively)