This paper presents data related to an article entitled “Green tea flavor determinants and their changes over manufacturing processes” (Han et al., 2016) [1]. Green tea samples were prepared with steaming and pan firing treatments from the tender leaves of tea cultivars ‘Bai-Sang Cha’ (‘BAS’) and ‘Fuding-Dabai Cha’ (‘FUD’). Aroma compounds from the tea infusions were detected and quantified using HS-SPME coupled with GC/MS. Sensory evaluation was also made for characteristic tea flavor. The data shows the abundances of the detected aroma compounds, their threshold values and odor characteristics in the two differently processed tea samples as well as two different cultivars.

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## Specifications Table

| Subject area         | Chemistry                |
|----------------------|--------------------------|
| More specific subject area | Aroma                   |
| Type of data         | Table                    |
| How data was acquired | HS-SPME coupled with GC/MS |
| Data format          | Analyzed                 |
| Experimental factors | Green tea samples were prepared from the fresh leaves of two cultivars following two different processing technology. Then the infusions were prepared brewing the sample leaves in the hot water for 5 min. |
| Experimental features | Volatile aroma compounds present in the tea infusions were identified and quantified using HS-SPME coupled with GC–MS. |
| Data source location | Shucheng, Anhui, China (31°31′ 87″ N, 117°02′ 84″ E) |
| Data accessibility   | Data is available with this article |

## Value of the data

- This adds to the limited public datasets available to compare the aroma compounds between the infusions prepared from differently processed green teas as well as from different cultivars.
- Threshold values and odor characteristics of detected volatiles will allow researchers to compare their data independently.
- Standard curves established using authentic compounds can be used by other researchers to quantify the volatiles.
- The data provides information about the changes specific to processing technology and cultivar differences.

## 1. Data

The data presented in Tables 1–6 display standard curves for compound quantification, tea sensory evaluation results, aroma compounds with varied abundances, perception threshold values in the infusions of the steamed processed (St) and pan firing processed (Pa) teas from cultivars ‘BAS’ and ‘FUD’. Dynamic changes in the abundance of different flavor compounds due to the processing treatments and cultivars can be found in the associated article [1].

## 2. Experimental design, materials and methods

### 2.1. Chemicals

For volatile profiling, authentic standards of linalool, linalool oxides, geraniol, citral, β-myrcene, limonene, β-ocimene, nerol, trans-nerolidol, farnesene, β-ionone, geranyl acetone, naphthalene, cis-3-hexen-1-ol, nonanal, benzene acetaldehyde, methyl salicylate, cis-hexenyl acetate, methyl jasmonate, cis-3-hexenyl hexanoate, 3-octen-1-ol, indole and ethyl decanoate were purchased from Sigma-Aldrich (Shanghai, China). cis-Jasmone was purchased from Aladdin Industrial Inc. (Shanghai, China).

### 2.2. Volatile profiling

Tea infusions were prepared using the fresh leaf samples and final product tea samples from two cultivars. Volatile collection, identification and quantification were conducted according to Wang et al. [7] using headspace-solid phase micro-extraction (HS-SPME) coupled with gas chromatography.
Table 1
Standard curves for the major volatiles established using a series of diluted solutions of authentic compounds.

| Compounds            | Formulaa | R²       | Linear range (μg kg⁻¹) |
|----------------------|-----------|----------|------------------------|
| β-Mycene             | Y=3E−6X+0.3179 | 0.9960   | 2.5–10.0               |
| Limonene             | Y=8E−6X+0.6167 | 0.9960   | 2.5–10.0               |
| β-Ocimene            | Y=2E−6X−0.2975 | 0.9959   | 2.5–10.0               |
| Linalool oxides I    | Y=2E−6X−0.0786 | 0.9981   | 5.0–20.0               |
| Linalool oxides II   | Y=5E−6X−0.0942 | 0.9954   | 5.0–20.0               |
| Linalool             | Y=4E−6X+2.8332 | 0.9973   | 10.0–30.0              |
| Nerol                | Y=4E−6X−0.4882 | 0.9999   | 2.5–10.0               |
| Geraniol             | Y=3E−6X+5.4386 | 0.9881   | 125.0–500.0            |
| Citral               | Y=4E−6X−1.1757 | 0.9610   | 2.5–10.0               |
| Geranyl acetone      | Y=4E−6X+0.2909 | 0.9976   | 2.5–10.0               |
| β-Ionone             | Y=4E−6X−1.2909 | 0.9992   | 5.0–20.0               |
| trans-Nerolidolb     | Y=3E−6X+2.1929 | 0.9881   | 5.0–20.0               |
| β-Farnesene          | Y=5E−6X+0.0771 | 0.9976   | 2.5–10.0               |
| Methyl salicylate    | Y=4E−6X−2.1275 | 0.9999   | 5.0–20.0               |
| cis-3-Hexenyl        | Y=1E−6X+0.8646 | 0.9865   | 2.5–10.0               |
| hexanoate            |           |          |                        |
| Methyl jasmone       | Y=2E−6X−0.6155 | 0.9999   | 2.5–10.0               |
| cis-Hexenyl acetate  | Y=9E−6X+5.1199 | 0.9728   | 10.0–30.0              |
| Nonanal              | Y=9E−6X+6.6491 | 0.9728   | 10.0–30.0              |
| cis-3-hexen-1-ol     | Y=4E−6X+1.8449 | 0.9534   | 2.5–10.0               |
| 3-Octen-1-ol         | Y=3E−6X+0.6951 | 0.9941   | 2.5–10.0               |
| Naphthalene          | Y=3E−6X+0.3251 | 0.9889   | 2.5–10.0               |
| Indole               | Y=6E−6X+1.3309 | 0.9912   | 5.0–20.0               |
| cis-Jasmine          | Y=1E−5X−0.3410 | 0.9988   | 12.5–50.0              |

a Y is the amount (μg kg⁻¹) of volatile compound based on the peak area X generated using GC–MS with the defined program.
b Mixture of enantiomers of (3S)-trans-nerolidol and (3R)-trans-nerolidol, which were not separately quantified in this study.

Table 2
Sensory evaluation of the tea samples.

| Green tea sample | Aroma          | Taste          | Overall quality |
|------------------|----------------|----------------|-----------------|
|                  | Score Characteristics | Score Characteristics |                          |
| BAS-Pa           | 92.8 ± 2.5 slight herb-like, nut-like, roasty | 89.8 ± 3.2 more astringent and brisker | 93.5 ± 5.4 a |
|                  | 83.6 ± 3.3 b nut-like, green leafy note, roasty | 81.7 ± 2.7 brisk, astringent | 81.3 ± 4.4 b |

* Values with the same letter did not have significant difference between the same columns, using t-test.

(Agilent 7697A)/mass spectrometry (Agilent 7890A) (GC/MS) with some minor modifications. In our experiments, 5 mL tea infusion was used for headspace volatile collection with the fiber (65 μM PDMS/DVB, Supelco, Bellefonte PA, USA) for 1 h. DB-5 capillary column (30 m × 0.25 mm × 0.25 μm, Agilent) was used for GC/MS analysis. The assays were carried out in triplicate for each sample. Ethyl decanoate (0.01%, 10 μL) was added to the samples as the internal standard. Chemicals were identified by comparing with either the standard substance or the NIST database [8]. Compounds quantification were calculated based either on the calibration curves established using series diluted solutions prepared with authentic standards or on the peak areas of the internal standard. The concentrations of the volatiles were expressed as μg kg⁻¹ DW.
Table 3
Volatiles with no significant differences in abundance (μg kg⁻¹ DW) between ‘BAS’ and ‘FUD’ among the different infusions of processed green teas or fresh leaves (Fr).

| No. | Volatile compounds                  | BAS-Pa       | FUD-Pa       | –      |
|-----|-------------------------------------|--------------|--------------|--------|
| 14  | cis-citral                          | 0.84 ± 0.24  | 0.57 ± 0.28  |        |
| 18  | Geranyl acetone                     | 0.65 ± 0.08  | 0.61 ± 0.09  |        |
| 23  | α-Calacorene                        | Trace        | ND           |        |
| 27  | Copaene                             | 1.32 ± 0.04  | 1.21 ± 0.36  |        |
| 34  | Butyl butanoate                     | Trace        | ND           |        |
| 35  | cis-3-Hexenyl hexanoate             | 1.48 ± 0.17  | 1.64 ± 0.36  |        |
| 39  | cis-3-Hexenyl acetate               | 3.01 ± 0.01  | 3.24 ± 0.10  |        |
| 45  | Hexadecane                          | 0.78 ± 0.31  | ND           |        |
| 46  | Hentriacontane                      | ND           | Trace        |        |
| 47  | Pentacosane                         | ND           | Trace        |        |
| 49  | Hexacosane                          | ND           | Trace        |        |
| 50  | Heptadecane                         | ND           | Trace        |        |

| No. | Volatile compounds                  | BAS-Pa       | FUD-Pa       | –      |
|-----|-------------------------------------|--------------|--------------|--------|
| 9   | Neo-allo-ocimene                    | 3.17 ± 0.28  | 2.56 ± 0.06  |        |
| 14  | cis-citral                          | 1.50 ± 0.22  | 1.06 ± 0.11  |        |
| 34  | Butyl butanoate                     | 1.11 ± 0.22  | 1.56 ± 0.67  |        |
| 36  | cis-3-Hexenyl-trans-2-hexenoate     | 8.78 ± 2.39  | 7.89 ± 1.78  |        |
| 45  | Hexadecane                          | 0.94 ± 0.16  | 2.17 ± 1.61  |        |
| 47  | Pentacosane                         | 1.28 ± 0.67  | 0.94 ± 0.37  |        |
| 49  | Hexacosane                          | ND           | Trace        |        |
| 57  | unknown                             | 3.28 ± 0.39  | ND           |        |
| 58  | unknown                             | 5.44 ± 0.28  | ND           |        |

| No. | Volatile compounds                  | BAS-Pa       | FUD-Pa       | –      |
|-----|-------------------------------------|--------------|--------------|--------|
| 3   | trans-β-Ocimene                     | ND           | ND           | 5.06 ± 0.28 |
| 9   | Neo-allo-ocimene                    | ND           | ND           | 3.17 ± 0.28 |
| 28  | Farnesene                           | ND           | ND           | 3.06 ± 1.44 |

| No. | Volatile compounds                  | BAS-Pa       | FUD-Pa       | –      |
|-----|-------------------------------------|--------------|--------------|--------|
| 36  | cis-3-Hexenyl-trans-2-hexenoate     | ND           | ND           | 8.78 ± 2.39 |
| 37  | trans-2-Hexenyl butanoate           | ND           | ND           | 27.87 ± 5.61 |
| 41  | trans-2-Hexenal                     | ND           | ND           | 2.67 ± 0.17 |
| 45  | Hexadecane                          | ND           | Trace        | Trace   |
| 47  | Pentacosane                         | ND           | Trace        | Trace   |
| 49  | Hexacosane                          | ND           | ND           | Trace   |
| 54  | 1-methyl-naphthalene                | ND           | ND           | 3.89 ± 1.00 |

| No. | Compounds                            | FUD-Pa       | FUD-Fr       | –      |
|-----|-------------------------------------|--------------|--------------|--------|
| 1   | β-Myrcene                           | ND           | ND           | 16.39 ± 2.33 |
| 2   | Limonene                            | ND           | ND           | 10.39 ± 0.83 |
| 3   | trans-β-Ocimene                     | ND           | ND           | 4.11 ± 0.61 |
| 9   | Neo-allo-ocimene                    | ND           | ND           | 2.56 ± 0.06 |
| 13  | Nerol                               | ND           | ND           | 5.39 ± 0.83 |
| 16  | Citral                              | ND           | ND           | 7.83 ± 1.06 |
| 36  | cis-3-Hexenyl-trans-2-hexenoate     | ND           | ND           | 7.89 ± 1.78 |
| 37  | trans-2-Hexenyl butanoate           | ND           | ND           | 6.94 ± 0.33 |
| 41  | trans-2-Hexenal                     | ND           | ND           | 9.00 ± 1.94 |
| 45  | Hexadecane                          | ND           | Trace        | Trace   |
| 46  | Hentriacontane                      | Trace        | Trace        | ND      |
| 47  | Pentacosane                         | Trace        | Trace        | Trace   |
| 48  | Heptacosane                         | Trace        | Trace        | Trace   |
| 49  | Hexacosane                          | ND           | Trace        | ND      |
| 50  | Heptadecane                         | Trace        | Trace        | ND      |
| 54  | 1-Methyl-naphthalene                | ND           | ND           | 2.11 ± 0.22 |

Note: The volatile compounds were putatively identified using NIST database and quantified based on internal reference compounds. DW-dry weight. ND-not detected.
Table 4
The most important compounds for observed variance in volatile profiles of pan-fire processed green teas between the two cultivars 'BAS' and 'FUD'.

| No. | Compounds                      | VIP  | No. | Compounds                      | VIP  |
|-----|--------------------------------|------|-----|--------------------------------|------|
| 1   | Linalool oxide I               | 1.323| 9   | β-Ocimene                       | 1.231|
| 2   | Linalool oxide II              | 1.314| 10  | cis-3-Hexenyl isovalerate       | 1.228|
| 3   | Naphthalene                    | 1.291| 11  | Unknown                         | 1.224|
| 4   | Limonene                       | 1.284| 12  | Geraniol                        | 1.217|
| 5   | Citral                         | 1.274| 13  | unknown                         | 1.196|
| 6   | (+)-δ-Cadinene                 | 1.255| 14  | Butyl butanoate                 | 1.185|
| 7   | Methyl salicylate              | 1.246| 15  | Hotrienol                       | 1.167|
| 8   | Methyl 2-methylvalerate        | 1.245|      |                                 |      |

Table 5
Threshold values and odor characteristics of detected volatiles.

| No. | Compounds               | Threshold value (ppb) | Aroma quality       | References                                      |
|-----|-------------------------|-----------------------|---------------------|-------------------------------------------------|
| 1   | β-Mycene                | 4.9                   | Herbaceous, woody   | www.leffingwell.com/odorthre.htm                |
| 2   | Limonene                | 10.0                  | Citrus, terpenic    | www.leffingwell.com/odorthre.htm                |
| 3   | trans-β-Ocimene         | 340.0                 | Green, terpenic     | www.leffingwell.com/odorthre.htm                |
| 4   | β-Ocimene               | 34.0                  | Sweet               | www.leffingwell.com/odorthre.htm                |
| 5   | Linalool oxide I        | 6.0                   | Floral green        | [2]                                             |
| 6   | Linalool oxide II       | 6.0                   | Fruity              | [2]                                             |
| 7   | Linalool                | 0.8                   | Floral, fruity      | [3]                                             |
| 8   | Hotrienol               | 110.0                 | Ginger like         | [4]                                             |
| 10  | Epoxylinalol            | 6.0                   | Sweet, woody        | [2]                                             |
| 11  | α-Terpineol             | 330.0                 | Floral, sweet       | [2]                                             |
| 13  | Nerol                   | 300.0                 | Rose, lime          | [2]                                             |
| 15  | Geraniol                | 3.2                   | Sweet floral        | [4]                                             |
| 16  | Citral                  | 30.0                  | Citrus, lemon       | www.leffingwell.com/odorthre.htm                |
| 18  | Geranyl acetone         | 60.0                  | Fresh, rosy         | www.leffingwell.com/odorthre.htm                |
| 22  | β-Ionone                | 0.007                 | Dry, floral, fruity | [4]                                             |
| 24  | trans-Nerolidol         | 2250.0                | Floral, woody       | www.leffingwell.com/odorthre.htm                |
| 32  | Methyl salicylate       | 40.0                  | Wintergreen like    | [2]                                             |
| 34  | Butyl butanoate         | 100.0                 | Rotten apple        | www.leffingwell.com/odorthre.htm                |
| 39  | cis-3-Hexenyl acetate   | 31.0                  | Green; banana-like  | www.leffingwell.com/odorthre.htm                |
| 40  | Benzene-acetaldehyde    | 4.0                   | Green               | www.leffingwell.com/odorthre.htm                |
| 41  | trans-2-Hexenal         | 17.0                  | Green apple-like, bitter almond-like | www.leffingwell.com/odorthre.htm |
| 42  | Nonanal                 | 1.0                   | Fatty, citrus, green| www.leffingwell.com/odorthre.htm                |
| 43  | Heptanal                | 3.0                   | Fatty green         | www.leffingwell.com/odorthre.htm                |
| 44  | Decanal                 | 2.0                   | citrus              | www.leffingwell.com/odorthre.htm                |
| 51  | cis-3-Hexen-1-ol        | 13.0                  | Lettuce-like        | [4]                                             |
| 52  | 3-Octen-1-ol            | 1.0                   | Green, meaty        | [2]                                             |
| 53  | Naphthalene             | 5.0                   | naphthalene         | [5]                                             |
| 55  | Indole                  | 1.0                   | Faecal, animal-like | [6]                                             |
| 56  | cis-Jasmone             | 1.9                   | Floral, jasmine-like| This study                                      |
Table 6
Volatiles that were present in the fresh leaf sample infusions but not detected among the processed green tea infusions of 'BAS' and 'FUD'.

| Volatile compounds          | BAS-St | BAS-Pa | BAS-Fr  |
|-----------------------------|--------|--------|---------|
| trans-β-Ocimene             | ND     | ND     | 5.06 ± 0.28 |
| Neo-allo-ocimene            | ND     | ND     | 3.17 ± 0.28 |
| Farnesene                   | ND     | ND     | 3.06 ± 1.44 |
| cis-3-Hexenyl-trans-2-hexenoate | ND   | ND     | 8.78 ± 2.39 |
| trans-2-Hexenyl butanoate   | ND     | ND     | 27.87 ± 5.61 |
| trans-2-Hexenal             | ND     | ND     | 2.67 ± 0.17 |
| 1-methyl-Naphthalene        | ND     | ND     | 3.89 ± 1.00 |
| Compounds                   | FUD-St | FUD-Pa | FUD-Fr  |
| β-Myrcene                   | ND     | ND     | 16.39 ± 2.33 |
| Limonene                    | ND     | ND     | 10.39 ± 0.83 |
| trans-β-Ocimene             | ND     | ND     | 4.11 ± 0.61 |
| Neo-allo-ocimene            | ND     | ND     | 2.56 ± 0.06 |
| Nerol                       | ND     | ND     | 5.39 ± 0.83 |
| Citral                      | ND     | ND     | 7.83 ± 1.06 |
| cis-3-Hexenyl-trans-2-hexenoate | ND   | ND     | 7.89 ± 1.78 |
| trans-2-Hexenyl butanoate   | ND     | ND     | 6.94 ± 0.33 |
| trans-2-Hexenal             | ND     | ND     | 9.00 ± 1.94 |
| 1-methyl-Naphthalene        | ND     | ND     | 2.11 ± 0.22 |

Note: Abundances of volatiles were presented as μg kg⁻¹ DW. ND—not detected.

2.3. Sensory evaluation of tea infusions

Three grams (accurate to 0.01 g) of the processed tea was infused with 150 mL of distilled boiling water for 5 min. By using a sieve, infused leaves were removed and tea infusions were transferred to glasses. The sensory evaluation was carried out by five trained panelists. They were instructed to evaluate the sensory responses regarding taste, aroma, and overall flavor quality by giving a score within 100 and also to note down the flavor characteristics of the samples. Subsequent analyses of the samples were performed in triplicate. The order of the samples was randomized. Between the tastes of the samples, every panelist drank natural mineral water and ate unsalted cracker to vanish the taste. Final sensory scores were statistically analyzed using T-test (P < 0.05).

Acknowledgements

This work was financially supported by the National Natural Science Foundation of China [Grant numbers 31070614 and 31370687], and the Research Fund for the Doctoral Program of Higher Education [20123418110002] to S. Wei. We also thank Professors Zaixin Hua, Qianyin Dai, Dr Jingjing Liu and Xinkai Yi at the Anhui Agricultural University for literature reviews.

Transparency document. Supplementary material

Transparency data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2016.12.025.

Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2016.12.025.
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