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Mr. Chris Dayton

Bunge Ltd
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Resubmission of Manuscript JAOCS-20-0285: Discrimination of Camellia seed oils processed by different extraction methods based on electronic tongue technology

Dear Mr. Chris Dayton,

Thank you for your e-mail on Sep. 15, 2020 in which you encourage us to resubmit a revision of the above manuscript. We would also like to give sincere thanks for so many instructive suggestions. We have revised the manuscript based on the comments and the detailed changes and responses are outlined on the following pages.

Hope for a favorable reply,

Sincerely yours,

Maocheng Deng

Response to Senior Associate Editor comments:

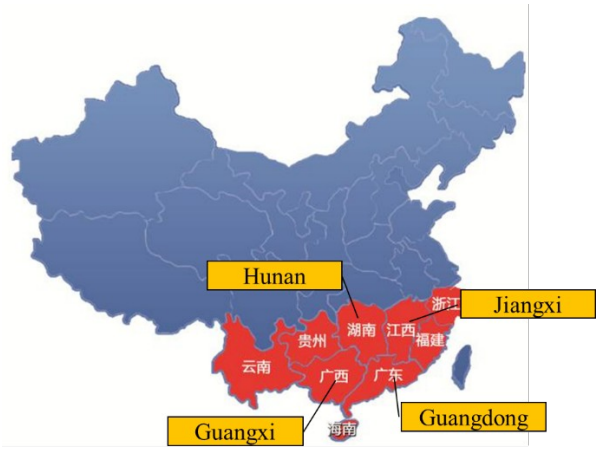
Comments 1: *The five commercially pressed oils cannot be used in this comparison. The seeds used in the commercial oils are different than the seeds extracted from the solvent and super critical experiments. The storage conditions of the bottle oils are unknown in the commercial samples. Additionally, antioxidants may have been added to the commercial samples. Were the presence of antioxidants determined?*

Response: We determined TBHQ, BHT and BHA by SN/T 1050-2014 method in the commercial samples and the test result is "not detected".

分析检测结果

分析项目	检测结果	计量单位	检测方法
TBHQ	未检出（检出限2）	mg/kg	SN/T 1050-2014
BHT	未检出（检出限2）	mg/kg	SN/T 1050-2014
BHA	未检出（检出限2）	mg/kg	SN/T 1050-2014

Commercial pressed oils are from five different cities in three different provinces (Hunan, Jiangxi and Guangxi) in South China. So the Camellia seeds used for press are representative. The seeds used for SCCE and solvent extraction are from Guangdong province which is next to Hunan, Jiangxi and Guangxi.



In Fig. 4 PCA analysis results, pressed oils scored relatively close which can illustrate that different seeds affect little on the taste value. So we consider it appropriate to compare all these oils prepared by different methods.

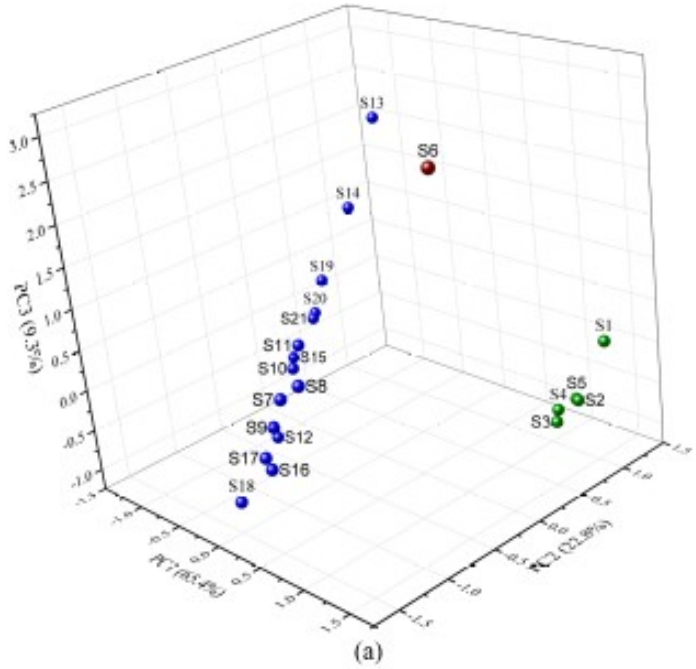


Fig. 4. The Principal component analysis three-dimensional diagrams of different *Camellia* oils based on e-tongue measurements (a: score plot)

Comments 2: *A single solvent extraction was performed. Was it a hot extraction*

(oilseed in the solvent) or was it a cold extraction (solvent dripping into a thimble of cold solvent) that is dumped once the thimble is full back into the boiling solvent?

Conditions are varied in an industrial solvent extractor....

Response: Oil sample (No. S6) extracted by n-hexane was carried out by soxhlet extraction method (Part 2.2) so that was a cold extraction.

Comments 3: *The 15 trials of super-critical extraction demonstrate difference for the instrumentation. More details need to be explained on why they may differ.*

The peroxide value of oils are typically changing all the time and is not constant. Great care must be made in the condition of the oil and the condition of the oil at the time of analysis using the various techniques.

Response: In part 3.3.2, we added "while SCCE samples, exhibited a wide range of positive to negative scores, almost splitting into 3 subgroups along both PC1 and PC2 directions: G1 (S13~S15 and S19~S21), G2 (S10~S12), and G3 (S7~S9 and S16~S18). (Fig. S2 in supplementary material). In $scCO_2$, higher pressure means stronger solvation power and better extraction ability of the fluid. Meanwhile, higher temperature improves dissolving of taste substances from the seed and also enhances their saturation vapor pressure resulting in better solubility, although higher temperature could lead to $scCO_2$ density decrease. These three groups well illustrated the $scCO_2$ extraction condition differences among the samples, as G1 represents better

solubility of solute in $scCO_2$ due to high temperature (S13~S15, 25 MPa, 333.15 K), or stronger solvent power due to high pressure (S19~S21, 30 MPa, 313.15 K); G2 represents medium temperature and pressure (S10~S11, 25 MPa, 323.15 K); G3 represents relative low temperature and pressure (S7~S9, 25 MPa, 313.15 K and S16~S18, 20 MPa, 313.15 K). For the three samples in one group, composition of the extracted oil varies with time, as shown in Fig. 2, this might be the reason that these samples are different.".

We agree that condition of the oil plays an important part in the oil quality and our further investigation will focus on this subject. In this study, all the samples were stored in refrigerator after prepared (part 2.2).

Comments 4: *All tables need to have legends to explain the material displayed. Examples Figure 1. Yield% vs T/h -- Oil Yield (%) vs Time (hours). The reader should not be guessing.*

Response: We added captions separately to the figures to make better description.