Author’s response to reviews

Title: Chemical composition and antioxidant capacity of extracts from Podophyllum hexandrum Rhizome

Authors:

LI MengFei (limengfei0921@163.com)
ZHOU LanLan (zhoulanlan_1988@163.com)
YANG DeLong (yangdl@gsau.edu.cn)
LI TianTian (li_tiantian_1988@163.com)
LI Wei (liwei@gsau.edu.cn)

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Author’s response to reviews: see over
Dear Editors and Reviewers:

Thank you for your letter and for the reviewers’ comments concerning our manuscript entitled “Chemical composition and antioxidant capacity of extracts from Podophyllum hexandrum Rhizome” (ID: 944580708237273). Those comments are all valuable and very helpful for revising and improving our paper, as well as the important guiding significance to our researches. We have studied comments carefully and have made revision which we hope meet with approval. Revised portion are marked in blue in the paper. The main corrections in the paper and the responds to the reviewer’s comments are as flowing:

1. The title effectively communicates the contents and the major points; it does not contain extra words. However, I suggest changing the term “Chemical” to “Biochemical”.

Answer: We accept the suggestion changing the term “Chemical” to “Biochemical” and have revised in the text.

2. In abstract section: “The ethyl acetate and ethanol extracts from P. hexandrum rhizome were analyzed by GC-MS (gas chromatography-mass spectrometry), and the antioxidant capacity of the extracts and the components was tested by using the DPPH (2, 2-diphenyl-1-picryl hydrazyl) and FRAP (Ferric reducing/antioxidant power) assays.” instead of “The ethyl acetate and ethanol extracts from P. hexandrum rhizome were identified and analyzed by GC-MS (gas chromatography-mass spectrometry), and the antioxidant capacity of the extracts and the components was tested by using the DPPH (2, 2-diphenylpicrylhydrazyl) and FRAP (Ferric reducing/antioxidant power) assays and evaluating IC_50 (Concentration inhibiting the 50% values of DPPH) and FRAP”.

Answer: We have revised in “the methods in the abstract section”.

3. In the last sentence of the Conclusions. I would propose to write: “Based on the above data it can be concluded that P. hexandrum can be recommended as an alternative plant material of antioxidant and radical scavenging activity”.

Answer: We have revised in “the Conclusions section” according to the suggestion.

4. References are not in the correct format. Please rewrite.

Answer: We have changed the style of references according to the journal.

5. Authors need to explain while they expressed their antioxidant activity in term of (I %) or (IC_50) instead of the area under the kinetic curve of DPPH bleaching. This is a more appropriate parameter since is based on the whole kinetic profile rather than a single time point value (Augustin Catalin Mot, Radu Silaghi-Dumitrescu, Costel Sarbu, Rapid and effective evaluation of the antioxidant capacity of propolis extracts using DPPH bleaching kinetic profiles, FT-IR and UV–vis spectroscopic data, Journal of Food Composition and Analysis 24 (2011) 516–522.).

Answer: Indeed, the kinetic curve of DPPH bleaching is a more appropriate parameter since it is based on the whole kinetic profile (fast acting and slow acting) rather than a
single time point value. From the above references (Page 518, 3.1.DPPH kinetics section), we could find that the method of “kinetic curve of DPPH bleaching” fit for “two main groups of antioxidants present in the samples” or “the total antioxidant activity in plant extracts that including many antioxidants”.

6. Explain to me how non-polar compounds (Ethyl iso-allocholate, β-Sitosterol, Hexadecanoic acid, ethyl ester, Oleic Acid,...) were identified in fraction with relative polarity (ethyl acetate and ethanol extract).

**Answer:** Molecular polarity is dependent on the difference in electronegativity between atoms in a compound and the asymmetry of the compound’s structure. While the molecules can be described as "polar covalent", "nonpolar covalent", this is often a relative term, with one molecule simply being "more polar" or "more nonpolar" than another.

Examples of common household polar molecules include sugar, for instance the sucrose sugar variety. Sugars have many polar oxygen–hydrogen (-OH) groups and are overall highly polar. A molecule may be nonpolar either because there is (almost) no polarity in the bonds. Examples of household nonpolar compounds include fats, oil, and petrol/gasoline.

However, many nonpolar organic solvents, such as turpentine, are able to dissolve polar substances. The most common form of such an interaction is the hydrogen bond, which is also known as the H-bond.


7. Ethanol has power extraction of more polar compounds from plants, which are not identified by GC-MS. Show examples of these compounds extracted with these solvents extraction (ethyl acetate and ethanol).

**Answer:** In fact, there are more polar compounds were identified by GC-MS in the ethyl acetate and ethanol extracts, such as D-Allose (Table 1, No.1), d-Gala-l-ido-octonic amide (Table 2, No.1) and sucrose (Table 2, No.2).

There are also more polar compounds identified by GC-MS during the experiments. Because the purpose of the GC-MS is to find the bioactivity components, the more polar compounds with low relative molecular mass compounds (In general, these compounds have low antioxidant capacity) such as Alcohol-phenol, Carboxylic acid, Ester, Ketone, Aldehyde, etc. were not selected and presented in the paper.

8. To improve the manuscript other tests that evaluate the antioxidant potential must be realized.

**Answer:** Thanks for the suggestion. Further study have beening prepared for evaluating the antioxidant capacity in vivo plasma in order to obtain the accurate and real values, to make for the disadvantages of the DPPH and FRAP assays in vitro. (The further study in vivo will be completed in cooperation with School of Medicine, Shanghai Jiaotong University. lixiaoyong0055@126.com and geginmin@126.com)
9. Improve English, grammar, and punctuation.

**Answer:** We have done our best to improve English and edit the manuscript.

Looking forward to hearing from you soon.

With kind regards,

Yours Sincerely

Mengfei Li

E-mail: limengfei0921@163.com