For research article

Response to Reviewer 1 Comments

1. Summary

I would like to express my sincere gratitude for taking the time to review this manuscript. Your expertise and valuable suggestions mean a great deal to me. The feedback you provided in your review was not only detailed but also included clear highlights of the corresponding revisions and corrections made in the resubmitted file. I truly appreciate your thoroughness and patience.

Your suggestions and revisions are extremely valuable in enhancing the quality and precision of this manuscript. With your professional guidance, I have acquired a more comprehensive understanding of the issues discussed in the article and have improved my ability to express my thoughts effectively. The necessary modifications have been made and are now highlighted in red font within the text.

2. Questions for General Evaluation	**Reviewer's Evaluation**	**Response and Revisions**
Does the introduction provide sufficient background and include all relevant references?	Yes	
Are all the cited references relevant to the research?	Yes	
Is the research design appropriate?	Must be improved	
Are the methods adequately described?	Can be improved	
Are the results clearly presented?	Must be improved	
Are the conclusions supported by the results?	Must be improved	

3. Point-by-point response to Comments and Suggestions for Authors

Comments 1: Many mistakes are repeated along the text which means that the texts have been not rewieved by the authors.

Response 1: Thank you for your meticulous editing of the article. I have made the necessary modifications and highlighted them in red font within the text.

Comments 2: The order of species do not follow alphabetically neither the sections nor the

species names.

Response 2: Thank you for your suggestion; we have revised the article. The species are arranged in alphabetical order, first by sections and then within each section. The most modified in the article are ' Table 1 ', ' Figure 2 ' and ' 3.2 Taxonomy '.

Comments 3: There are omissions in the comparative taxonomic comments in which differences with some cited taxa are forgotten.

Response 3: Thank you for your meticulous editing of the article. I have made the necessary modifications and highlighted them in red font within the text.

Comments 4: Nomenclature notations are in many cases not fine.

Response 4: Thank you for your suggestion. The genus *Agaricus* boasts over 500 species, many of which share similar morphological characteristics, posing a challenge in assigning appropriate nomenclature to newly discovered species.

Comments 5: Many times the same character is not uniformly described (in some cases with mistakes) and this denotes that a revision has been not carried out by the authors.

Response 5: Thank you for your meticulous editing of the article. I have made the necessary modifications and highlighted them in red font within the text.

Comments 6: The discusion has nothing to do with the subject of the paper.

Response 6: Thank you for your suggestion. The discussion in the article was revised by us.

Thank you for your meticulous editing of the article. I have made the necessary modifications and highlighted them in red font within the text. I need to answer some important questions.

The relevant information is as follows:

Commented [rev.3]: As circumscribed in the paper the genus Agaricus cannot be distinguished from *Micropsalliota*, *Xanthagaricus* or *Hymenagaricus*, all in the family Agaricaceae.

Response: Thank you for pointing this out. This content has been modified in the article. '*Agaricus* L. is a large genus of the family Agaricaceae, with *Agaricus campestris* L. as the type; it could be distinguished from other genera by its unique characteristics, which include small-sized to large-sized fleshy basidiomata, free lamellae which are white or pink when young but at maturity become brown to dark brown, presence of an annulus on the stipe, brown basidiospores, brown spore prints, and pileipellis a cutis of cylindrical hyphae [1–5].'

Commented [rev.4]: The infrageneric ranks are binomials as the species names are and it cannot cited without the genus name. Again it is a widespread mistake, but even if it is widespread remains a mistake. Please look at the Code and you can check that infrageneric names are never abbreviated "section xxxxx" or "sect. xxxxx".

Response: Thank you for pointing this out. The names of all subgenera and sections have been changed to '*A.* subg. XXX' or '*A.* sect. XXX'.

Commented [rev.5]: I think that it is better to use clades when the authors use branches in the paper.
Response: Thank you for pointing this out. Therefore, "the branch" be replaced by "the clade".

Commented [rev.6]: The authors have forgotten *A*. subg. *Conioagaricus* Heinem. which is validly published and must not be ruled out until the type can be probed that it is a synonym of a previously published subgenus name.
Commented [rev.7]: The authors have overlooked the sections of *A*. subg. *Conioagaricus*: *A*. sect. *Intermedii*, *A*. sect. *Pulverotecti* and *A*. sect. *Striati*, and the sections of *A*. subg, *Lanagaricus*: *A*. sect. *Lanosi* and *A*. sect. *Olicacei*.
Response: Thank you for pointing this out. 'In subsequent studies, new subgenera and sections were established **based on the new taxonomic system**; presently, Agaricus comprises six subgenera and 27 sections [6, 10–14].' This conclusion is based on new taxonomic system proposed by Zhao et al. (2016).
'There is a seventh subgenus, *A*. subg. *Conioagaricus*, containing three sections: *A*. sect. *intermedii*, *A*. sect. *Pulverotecti*, and *A*. sect. *Striati* [15]. However, due to the members of *A*. subg. *Coniagaricus* have an epithelium pileipellis which is completely different from species of the other subgenera, *A*. subg. *Coniagaricus* is suggested to be relocated to other genera [2, 16]. Unfortunately, in the absence of available molecular data, *A*. subg. *Conioagaricus* has not been studied molecularly within the framework of the new taxonomic system proposed by Zhao et al. (2016) [2]. *A*. subg. *Lanagaricus* [15] has been proved a heterotypic synonym of *A*. subg. *Pseudochitonia* [2].' This content has been added in the article.

Commented [rev.10]: In my view the spore length x width average should be also provided in all the new species, as it is in the majority of works in mycology and not only for the Q coeficient
Response: Thank you for pointing this out. We have provided the spore length x width average. '[Xav = e × f] indicates the average size of basidiospores.'

Commented [rev.19]: Where it is 0.8-1.4 cm thick?
Response: Thank you for pointing this out. 'Context of the pileus up to 0.8–1.4 cm thick, ..'

Commented [rev.21]: This is not a term used in mycology. I guess the authors meant what I have written but if not so they should look for an adequate term to describe the pileus.
Response: Agree. Thank you for your careful editing of the article. 'blunt in center' means 'obtusely umbonate at the center'.

Commented [rev.22]: What about griseicephalus also recorded from China.
Response: Thank you for pointing this out. We have added this content. '*A. griseicephalus* has a smooth, light brown pileus at maturity, and smaller Qav (Qav = 1.3)'

Commented [rev.23]: Where?

Response: Thank you for pointing this out. We have added this content. '*Agaricus agrocyboides* Heinem. & Gooss.-Font. was found in index Fungorum (https://www.speciesfungorum.org/Names/SynSpecies.asp?RecordID=292238).'

Commented [rev.25]: What is this shape? A mirror can have hundreds of shapes.
Response: 'convex mirror-shaped' means 'convex-mirror shaped' or 'convex'. We chose 'convex' instead of 'convex mirror-shaped'.

Commented [rev.27]: ?
Response: Agree. Thank you for your careful editing of the article. 'long corm-like' means 'globose with a long peduncle'.

Commented [rev.28]: ?
Response: Agree. Thank you for your careful editing of the article. 'fan-shaped' means 'sphaeropedunculate'.

Commented [rev.31]: Please complete the paragraph as in other species.
Response: *Agaricus* sp. ZRL2012630 was uploaded by Zhao et al. [2], but no formal description was provided.

Commented [rev.34]: These differences with *A. arvensis* are very weak.
Response: Thank you for pointing this out. 'Although the macroscopic characteristics of both exhibit minimal differences, discernible disparities exist in their molecular characters.'

The remaining concerns have all been addressed in the article.

4. Response to Comments on the Quality of English Language
Point 1: The paper needs a major review of the English language, not only in regards to grammar and orthography but also in scientific terminology.
Response 1: Thank you for your meticulous editing of the article. I have made the necessary modifications and highlighted them in red font within the text.
5. Additional clarifications
Thank you once again for your meticulous editing and thorough review of this article. Best wishes.