



Interactive comment on “In vitro formation of Ca-oxalates and the mineral glushinskite by fungal interaction with carbonate substrates and seawater” by K. Kolo and Ph. Claeys

Anonymous Referee #2

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General comments:

The major conclusion of this paper is that fungi are able to dissolve carbonates and concomitantly precipitate oxalates. This has been known for almost two centuries (Braconnot 1825). In addition, de Bary already mentioned in 1887 in his book, “Comparative morphology and biology of the Fungi mycetozoa and Bacteria”, “calcium oxalate is a substance so generally found in the fungi that it is quite unnecessary to enumerate instances of its occurrence”. The fact that the authors produced in vitro glushinskite is a minor result.

The experimental procedure is poorly thought-out. If I may, I suggest the authors follow experimental procedures such as those used by Prof. G.M. Gadd’s team.

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- The experiments are conducted without any controlled parameters, making their results questionable at best: either the work should be done in the lab with identified strains and under specific conditions (i.e. state variables), or it should be conducted in the field under true natural conditions.
- This experiment seems inappropriate considering the aim of the paper: nothing is controlled, there are no measured parameters, no strain purification (it is difficult to imagine EPS without any Bacteria). Which organism does what? If the purpose is only to demonstrate oxalate production by Fungi during carbonate dissolution by oxalic acid, this has been known since the 19th century.
- This paper is mainly descriptive and based on SEM images. Even if the images are of excellent quality and the idea of using Raman spectrometry pertinent, the information they bring to the reader is already well known.
- Finally, there are several unsubstantiated conclusions such as “zoned Ca-oxalate crystals” as possible precursors to “oidial structures”, or transformation of Ca-oxalate crystals “through diagenesis into real carbonates similar to sedimentary ooids”. How does this occur?

Answer to BGD questions:

1. Does the paper address relevant scientific questions within the scope of BG? Yes
2. Does the paper present novel concepts, ideas, tools, or data? No, no novel concepts, ideas or tools.
3. Are substantial conclusions reached? No
4. Are the scientific methods and assumptions valid and clearly outlined? Yes
5. Are the results sufficient to support the interpretations and conclusions? Partially

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6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? Yes
7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? The subject has already been treated since almost two centuries (Braconnot 1825). This manuscript only confirms what is already known and provides better SEM images than currently available. The question is : is this enough to merit publication ?
8. Does the title clearly reflect the contents of the paper? Yes
9. Does the abstract provide a concise and complete summary? Yes
10. Is the overall presentation well structured and clear? No, some repetition.
11. Is the language fluent and precise? Yes
12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Not applicable
13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? Yes
14. Are the number and quality of references appropriate? No, see 7.
15. Is the amount and quality of supplementary material appropriate? Not applicable.

Specific comments: I made over 20 comments on the manuscript but since the main content does not reach publishable standards, I will not include them. There are problems with figures, missing references, contradictions in figures etc.

Interactive comment on Biogeosciences Discussions, 2, 451, 2005.