

Review of: "Relationship between In Vitro Physical Properties and In Situ Biofilm Formation of Fissure Sealants"

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Potential competing interests: No potential competing interests to declare.

The aim of this manuscript is to investigate and compare the physical properties of 3 different fissure sealant materials, a new biomimetic hydroxyapatite (BHAP), and human enamel (E) samples under in vitro conditions; furthermore, *in situ*-formed biofilms on these materials, either with or without a HAP-containing paste, were evaluated using SEM.

This manuscript shows rich content, providing a deep insight into some works: the study is within the journal's scope, and I found it to be well-written, providing sufficient information. Even if the manuscript provides an organic overview, with a densely organized structure and based on well-synthesized evidence, there are some suggestions necessary to make the article complete and fully readable. For these reasons, the manuscript requires major changes.

Please find below an enumerated list of comments on my review of the manuscript:

MINOR POINTS:

The authors should provide a list of the abbreviations mentioned in this manuscript.

MAJOR POINTS:

INTRODUCTION:

The development in biomaterial science was deeply linked with progress in artificial bone materials, which mostly focused on the application of bioactive or biodegradable materials. During this era, second-generation biomaterials, known as bioactive ceramic materials, emerged and, among them, hydroxyapatite (HA) (see for reference: Nagaraj, A., Kalagatur, N. K., Kadirvelu, K., Shankar, S., Mangamuri, U. K., Sudhakar, P., & Samiappan, S. (2022). Biomimetic of hydroxyapatite with *Tridax procumbens* leaf extract and investigation of antibiofilm potential in *Staphylococcus aureus* and *Escherichia coli*), gained prominence.

MATERIALS AND METHODS:

Paragraph 2.2.3: The manuscript may benefit from providing a more detailed description of the SEM standard preparative. For example, describing the concentration of Osmium Tetroxide (OsO₄) in distilled water, and also indicating the concentrations of alcohol solutions used for the dehydration (70% - 80% - 90% - 100%) (see, for reference: Bianchi, S.; Mancini, L.; Torge, D.; Cristiano, L.; Mattei, A.; Varvara, G.; Macchiarelli, G.; Marchetti, E.; Bernardi, S. Bio-Morphological

Reaction of Human Periodontal Ligament Fibroblasts to Different Types of Dentinal Derivates: In Vitro Study. *Int. J. Mol. Sci.* **2021**, *22*, 8681. <https://doi.org/10.3390/ijms22168681>). This is the major concern of this manuscript: to confirm the reproducibility of the performed experimental procedures, the authors should improve this section. There is not a specific and detailed explanation for the methods used for SEM standard preparative in this study. The methodology applied is overall correct but should be improved in this section.

The main topic is interesting and certainly of great clinical impact. As regards the originality and strengths of this manuscript, this is a significant contribution to the ongoing research on this topic, as it extends the research field on the physical properties of three different fissure sealant materials, a new biomimetic hydroxyapatite (BHAP), and human enamel (E) samples, under in vitro conditions. Overall, the contents are rich, and the authors also give their deep insight into some works.

As regards the section of results, they are reliable and adequately discussed.

The conclusion of this manuscript is perfectly in line with the main purpose of the paper: the authors have designed and conducted the study properly. As regards the conclusions, they are well written and present an adequate balance between the description of previous findings and the results presented by the authors.

Finally, this manuscript also shows a basic structure, properly divided, and looks very informative on this topic. Furthermore, figures and tables are complete, organized in an organic manner, and easy to read.

In conclusion, this manuscript is densely presented and well organized, based on well-synthesized evidence. The authors were lucid in their style of writing, making it easy to read and understand the message portrayed in the manuscript. Besides, the methodology design was appropriately implemented within the study. However, many of the topics are very concisely covered. This manuscript provided a comprehensive analysis of current knowledge in this field. Moreover, this research has futuristic importance and could be potential for future research. However, major concerns of this manuscript are with the introductive and methodological sections: for these reasons, I have major comments for these sections, for improvement before acceptance for publication. The article is accurate and provides relevant information on the topic, and I have some major points to make that may help to improve the quality of the current manuscript and maximize its scientific impact. I would accept this manuscript if the comments are addressed properly.