

**LETTER TO THE EDITOR**

# Virucidal potential of H<sub>2</sub>O<sub>2</sub>-based spray against SARS-CoV-2 and biosafety in a dental environment

Dear professor Giovanni Lodi,

It was with great interest that we read the letter written by Ionescu et al. (2020). The preliminary results of the study were enthusiastic, considering the substantial value toward the biosafety in the dental field, covering not only private offices but also sectors with high patient turnover, such as maxillofacial traumatology at hospitals. In a search performed in the PubMed® database (December 27th, 2020), using “hydrogen peroxide and COVID-19” as descriptor, 90 results were shown, including reviews and original articles. With this in mind, we have some questions and comments about the article.

The study reproduces a dental procedure with aerosol generation in a chamber with phantom heads, detecting the dissipation of SARS-CoV-2 onto surfaces of personal protective equipment (PPE) through salivary droplets. Unlike authors who employed the hydrogen peroxide vapor (HPV) in high concentrations or the association of HPV/UV radiation for the disinfection of materials (Gurnani et al., 2020; Jatta et al., 2021), Ionescu et al. (2020) verified that the use of 0.5% hydrogen peroxide was enough to ensure an expressive virucidal activity and decrease the viral load. The research findings are impactful when considered that saliva is a potential vehicle for the transmission of the novel coronavirus, showing rates greater than 90% (Xu et al., 2020).

In contrast to the initial empiricism around the viability of the hydrogen peroxide, the results obtained by Ionescu et al. (2020) reinforced the oxidative properties of the agent against SARS-CoV-2, providing evidences for its use and mitigation of the scarce literature concerning the topic (Ortega et al., 2020). Therewith, relevant issues may be raised, such as the applicability of 0.5% H<sub>2</sub>O<sub>2</sub> as a mouthwash. Although some works highlight the corrosiveness and risk of damage to the mouth tissues associated with the hydrogen peroxide (Colares et al., 2019; Lin et al., 2019), it is worth mentioning, conversely, the dose-dependent effects and the long-standing tradition in Dentistry, for instance, in dental bleaching, plaque control, gingival index, and pocket depth (Marshall et al., 1995). Moreover, the patient will not use hydrogen peroxide as a mouthwash routinely, but only in dental care to minimize the risk of transmission of the novel coronavirus in the work environment, especially from asymptomatic patients. Cytotoxic effects of 3% H<sub>2</sub>O<sub>2</sub> were reported only in few participants, closely related to the administration of high levels of the solution over several days or a previous history of recurrent ulcer (Marshall et al., 1995).

The virucidal action of this agent is wide, as noted by Capetti et al. (2020) in disinfection of nasal mucosa of asymptomatic or SARS-CoV-2-positive patients before collection through swab, being tolerable and effective, resulting in a decrease in the viral replication rate.

In conclusion, the use of 0.5% H<sub>2</sub>O<sub>2</sub> spray can be a viable alternative for SARS-CoV-2 control, mainly in the daily practice during dental procedures while positive results of mass vaccination are expected.

**KEYWORDS**

biosafety, coronavirus, COVID-19, hydrogen peroxide, infection control

**CONFLICT OF INTEREST**

None.

**AUTHOR CONTRIBUTIONS**


**Lucas Alves da Mota Santana:** Conceptualization; Data curation; Funding acquisition; Investigation; Methodology; Writing – original draft. **John Nadson Andrade Pinho:** Conceptualization; Data curation; Funding acquisition; Investigation; Methodology; Writing – original draft. **Hélio Igor Melo de Albuquerque:** Supervision; Validation; Visualization; Writing – review and editing. **Liane Maciel de Almeida Souza:** Supervision; Validation; Visualization; Writing – review and editing.

**ETHICAL APPROVAL**

None required.

**PEER REVIEW**

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