

Mini Review

Using Mouthwashes by a Healthcare Practitioner in Order to Decrease the Chance of Transmission of COVID-19

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Introduction

The use of mouthwashes has shown that they can reduce the viral load of Covid-19, with the most promising mouthwashes containing hydrogen peroxide (H₂O₂), Cetylpyridinium Chloride (CPC), Povidone Iodine (PVP-I) and Chlorhexidine Gluconate (CHX) [1]. Since Sars-Cov-2 is transmitted by airborne droplets and the respiratory tract is the main route of infection, having a way to clear this pathway can ensure that the practitioner does not contract Covid-19 in their patients.

Discussion

Chlorhexidine (CHX)

CHX is a wider-spectrum antiseptic that has an action on Gram-negative and Gram-positive facultative anaerobes, fungi, bacteria, and aerobes by increasing the bacterial cell wall permeability, then causing its cell lysis [2,3]. It is mainly used in dentistry procedure to treat periodontal disease and reduce dental plaque [4].

Evidence shows that an *in-vitro* consequence against lipid-enveloped viruses like herpesvirus 1, influenza A, cytomegalovirus, hepatitis B and parainfluenza virus [5]. Even though COVID-19 is virus with an envelope, 0.12% CHX gluconate was recommended to have no or little effect against coronaviruses when associated with other type of mouthwashes [6-8]. On the other hand, Yoon et al. [9] shown that SARS-CoV-2 suppression for two hours after consuming 15ml 0.12% CHX once, suggesting that its application would be helpful for the transmission of control of COVID-19.

Hydrogen peroxide (H₂O₂)

Since the turn of the century, H₂O₂ has been used in dentistry in salt combination or alone since the turn of the century [10]. Like a mouthwash, it is a clear, colorless, odorless liquid [11]. No adverse effects on soft tissue have been shown in many studies using 1-1.5 % H₂O₂ as a daily rinse over two years of follow-up [12,13].

An *in vitro* study that 3% H₂O₂ entirely inactivates type 4 adeno-associated viruses, influenza A and B, 1B and 7 rhinoviruses, type 6 and 3 adenoviruses, type 1A, mixoviruses, respiratory syncytial virus with a long-term strain, and the Coronavirus strain 229E within 1-30 minutes, the study shows that influenza virus and coronaviruses were the most subtle [14]. Because SARS-CoV2 is susceptible to oxidation, pre-procedure mouth rinses containing oxidizing agents like the 1% H₂O₂ should have reduced viral load in saliva [6,15].

Iodopovidone

Povidone Iodine (PVP-I) is a iodine water-soluble mixture that is widely used as a preoperative mouthwash and skin antiseptic [16]. It is commonly used at a concentration of 1% [17] to treat mucositis, prevent ventilator-associated pneumonia and prevent oropharyngeal infections. Its antimicrobial effect is manifested after free iodine dissociates from polyvinylpyrrolidone, then iodine quickly penetrates microbes, destroying proteins and oxidizing nucleic acid structures, causing the death of microbes [18,19]. Prior studies have shown that PVP-I is more virucidal than other commonly used antiseptics, including benzalkonium chloride and CHX [20]. It is nontoxic, reporting a incidence of 0.4% of allergy cases [21], does not cause or taste disturbance and tongue or tooth discoloration [22] and, nothing like alcohol-based products, can be used along with electrocautery [23]. Its efficiency has been well revealed in many studies of *in vitro* against several viruses, including and influenza A (H1N1) virus SARS-CoV, and MERS-CoV [16,20,24]. Recent studies have shown that 0.23% PVP-I mouthwash perform procedure for at least 15 seconds before can reduce viral load in saliva [24], representing its procedure in COVID patients -19 [6,18,25,26].

Effectiveness of mouthwash on viral load

The Centers for Disease Control and Prevention (CDC) has long suggested taking advantage over mouthwash in reducing airborne pathogens of all kinds prior to clinical procedures [27]. During this global pandemic, given the encounters associated with dispatching dental procedure, attention has been drawn to the potential use of mouthwashes to reduce and prevent SARS-CoV-2 transmission.

Conclusion

Mouthwashes are an effective way to reduce the transmission of viruses that infect the respiratory tract. As oral cavities are a major source of entry and transmission for human coronaviruses, so mouthwashes are the preventive measure to reduce the risk of COVID-19. Mouthwashes, especially PVP-I, are a potential antiviral that can significantly minimize viral load in saliva and then aerosols, thereby reduce the spread of COVID-19 infection. However, there is paucity of literature and, as a result, a lack of knowledge among dental practitioners about the value of using mouthwashes. Consequently,

there is a great need for more clinical trials in order to take a step forward in clinical practice.

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