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Can Alka-White Mouthwash Reduce the Viral Load of COVID-19 in the Oropharynx?

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Abbreviation

COVID-19: Coronavirus-19

Coronavirus-19, also known as COVID-19, is an upper respiratory disease that has recently caused a massive pandemic. Due to the effect COVID-19 has had on society, scientists worldwide have been attempting to discover ways to combat the disease. As the virus spreads through the respiratory tract, is it possible that gargling with an oral care product, such as Alka-White, could provide benefits against the disease? There is a short window between exposure and infection of the lungs [1]. During this period gargling and sinus irrigation could lessen viral load. After investigation, we conceptually propose that Alka-White can reduce the viral load in the oropharynx of laboratory-confirmed COVID-19 patients due to its alkaline and effervescent characteristics.

Alka-White is a natural, organic mouthwash, patent #517759481np, that creates an ideal oral environment [2]. The mouthwash comes in a single tube contained with dry, effervescent tablets. A dry tablet is placed in lukewarm water, gargle for fifteen seconds and then nasal irrigate with the remainder. Alka-White contains ingredients and essential oils such as Sodium Bicarbonate, Xylitol, Coconut Oil and Tea Tree Oil. Alka-white's unique characteristics are its alkaline and effervescent features. The action of exposing the oral cavity environment to the pH buffer prevents acidic erosion and decay. Many bacteria and viruses thrive in acidic environments and exposing them to a topical alkaline solution results in unfavorable living conditions.

The coronavirus family contains multiple upper respiratory diseases. Some examples are severe-acute respiratory syndrome, middle east respiratory syndrome, and the common cold. COVID-19 is spread through respiratory droplets and can stay on a surface for extended periods. According to the CDC, symptoms entail fever, headache, sore throat, shortness of breath, cough, chills, dysgeusia, and muscle pain [3]. The disease is spreading at an exponential rate, having over one million confirmed cases in the United States and over 65,000 deaths [4]. There is a high priority to discover methods to combat the virus, in hopes of returning to a degree of normalcy. Many vaccines and therapies are currently under clinical investigation. One method which has not received much attention in the United States is gargling.

In the country of Japan, a common mechanism to combat upper respiratory infections is gargling [5]. Gargling is a simple and safe hygienic measure. Studies conducted in Japan showed that gargling was useful as a prophylactic measure [5,6]. The reasoning stems from

how the virus spreads through the respiratory tract and that gargling with an antimicrobial could reduce the viral load of the disease in the oropharynx region of the respiratory tract. A study has shown for water to be effective in reducing the prevalence of upper respiratory infections [7]. The physical aspect of gargling could be disturbing the virus and helping remove it from the oropharynx. However, it could be the chlorine that was found in the water, which is antimicrobial. The current mechanism of action of how gargling water provided benefits against upper respiratory infections is not fully understood.

In another country, Pakistan, a clinical trial has been approved to assess how effective gargling is lessening the viral load in laboratory-confirmed COVID-19 patients. In the study, the patients are asked to rinse and use the mouthwash solution as a nasal lavage. The current mouthwashes being tested are Neem, Listerine, Povidone Iodine and Saline Water [8]. This type of study is similar to what Alka-White should conduct.

A study conducted on the coronavirus family, showed that the virus has a low pH-dependent fusion activation during entry into host cells [9]. Alka-White would expose the virus to an alkaline environment, which would create unfavorable living conditions for the virus. Alka-white because of its sodium bicarbonate, greatly alkalizes environments it is exposed to. This could provide potential to reduce the viral load. Moreover, Alka-White has an effervescent action and could provide better, more rigorous physical activity while gargling. For these reasons, Alka-White conceptually could reduce the viral load in the oropharynx region.

For Alka-White to be proven as effective in reducing the viral load of laboratory-confirmed COVID-19 patients in the oropharynx, a large clinical study must be conducted. It makes logical sense that exposing the oropharynx while gargling to a specific solution could reduce the viral load in that area. However, which solution and why can only be determined through valid extensive clinical trial studies. Recommended next steps to further investigate entail conducting thorough *in-vitro* and *in-vivo* clinical research trials.

Conflict of Interest

Lewis Gross hired Sameer Atrash to help investigate. The researcher, Sameer Atrash, does not have any equity in Alka-White, but Lewis Gross does.

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