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Formulation and evaluation of nitric oxide nasal spray

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Abstract---Many studies have found that anti-covid nasal sprays and gargles are more effective at preventing SARSCOV-2 infection. Antiviral qualities are seen in anti-covid nasal sprays and gargles. "Invisi Mask, Nitric oxide Nasal spray (NONS), Povidone-iodine Nasal spray (PVP-I), Taffix spray" are some of the most regularly used anti-covid nasal sprays. "Povidone-iodine gargle (PVP-I), Betadine gargle, 'Nozin,' Chlorhexidine gargle, hydrogen-peroxide gargle, dequonal, dequalinium chloride, and Benzalkonium chloride independently with antiviral and virus, Cetylpyridinium chloride, C31 G," We also found that pre-treating cells with the product prevented SARS-CoV-2 infection, regardless of viral subtype. The creation of a physical, passive barrier appears to be the major mechanism of action. In other combinations, however, the addition of wild garlic gave extra direct antiviral activities. We suggest that nasal sprays based on HPMCs could be a useful supplement to efforts for limiting the transmission of respiratory viruses, such as SARS-CoV-2.

Keywords---formulation, evaluation, nitric oxide, nasal spray.

Introduction

Introduction SARS-CoV-2 is a large, enveloped virus belonging to the Coronaviridae family that is the causative agent of the coronavirus disease (COVID-19) pandemic, which has infected over 194 million people and killed over 4 million people globally (<https://covid19.who.int/> (accessed on 23 September 2021)). Respiratory viruses, including SARS-CoV-2, are transmitted from person to person by the formation of aerosols that contain droplets of varied sizes during activities such as sneezing, coughing, and talking [1–4]. The virus can be transmitted in one of two ways: (1) virus-laden droplets exhaled by an infected person come into contact with an uninfected person's eyes, nose, or mouth; or (2) droplets that have settled on surfaces and are then transferred to an uninfected person's hands, who then touches their eyes, nose, or mouth. Airborne and droplet particle transfer via direct contact with the eyes, nose, or mouth is a likely

mode of SARS-CoV-2 infection, according to current findings [5–7]. Many non-pharmaceutical strategies in the combat against COVID-19, such as mask use and maintaining a social distance of at least 2 meters, are based on this research[8-10]. Nasal sprays are available over-the-counter and can help prevent infection and spread of respiratory germs. While some solutions use small pharmacological molecules or reactive species like reactive oxygen and nitric oxide to actively target the virus, others rely on the formation of a physical barrier to prevent virus absorption[11-14]. Semi-synthetic or natural gelling chemicals, such as hydroxypropyl methylcellulose, are used to create these passive barriers[15-17].Figure 1 shows the Formulation and Evaluation of Nitric Oxide Nasal Spray

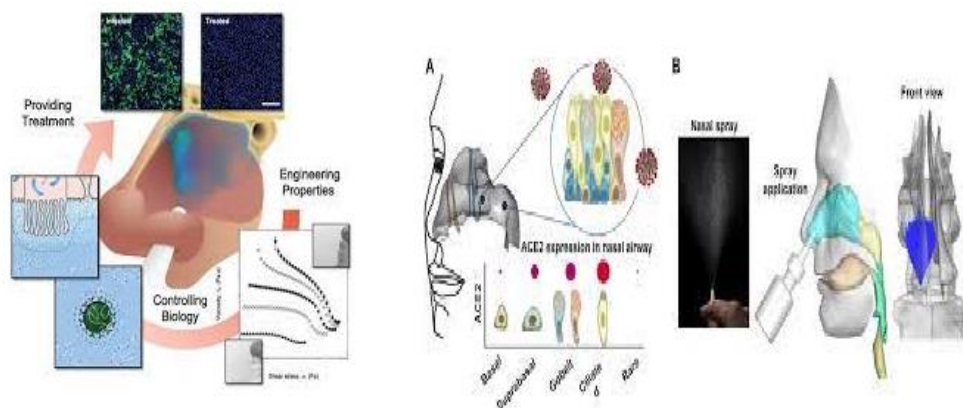


Figure 1: Formulation and Evaluation of Nitric Oxide Nasal Spray (Add evaluation Parameters of Nasal spray)

Method

Arm Intervention/treatment

Nitric Oxide Releasing Solution is the active comparator.

Nasal spray with nitric oxide releasing solution (NORS) applied up to three times each day in the morning, afternoon, and nighttime.

0.56 mL NORS @ 0.11ppm*hrs maximum volume delivered

Drug: Nitric Oxide

For NORS administration, the Sponsor created a two chamber nasal spray container. To make the final NO-producing formulation, components from two chambers are combined together. The liquid contains NO at a concentration of 0.11 ppm*hour, which functions as a viricide. Participants will be given instructions on how to store, prepare, and deliver the study treatment. Figure 2 shows the Formulation of a Composite Nasal Spray Enabling Enhanced Surface

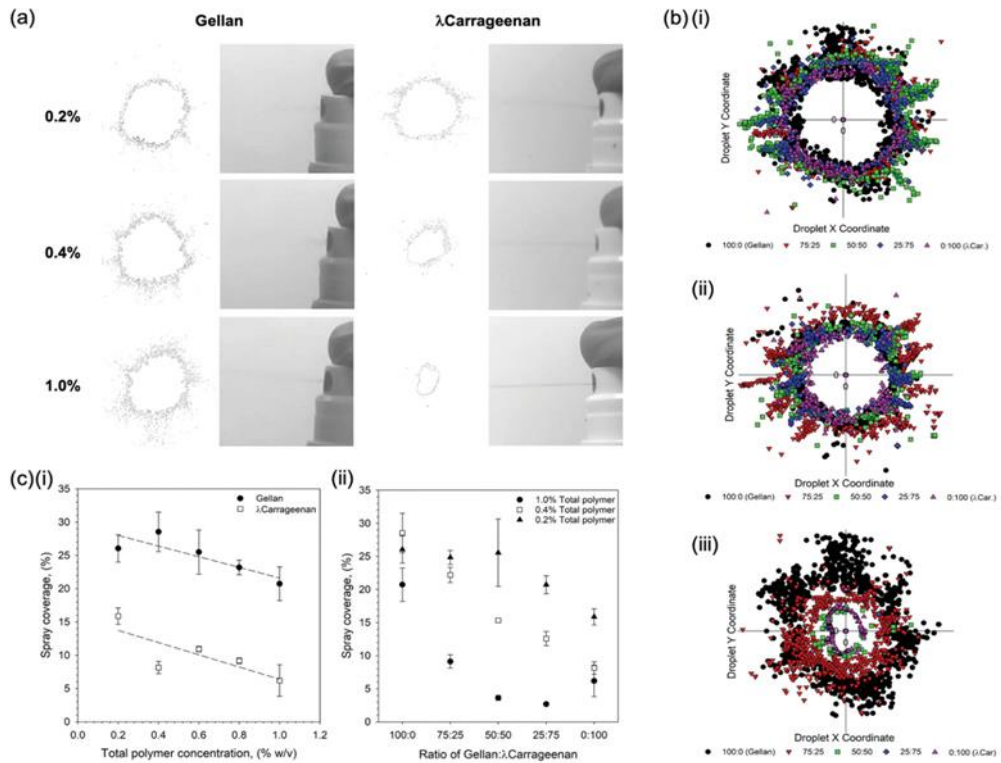


Figure 2: Formulation of a Composite Nasal Spray Enabling Enhanced Surface Other Name: Nasal Spray

Device: Nasal spray with isotonic saline

For NORS administration, the Sponsor created a two chamber nasal spray container. Before being given to the participant, the bottle will be filled with regular saline. Other names: 0.9 percent saline, normal saline. Figure 3 shows the Advances in the Prophylaxis of Respiratory Infections by the Nasal and the Oromucosal Route: And Figure 4 shows the Output of Formulation and Evaluation of Nitric Oxide Nasal Spray

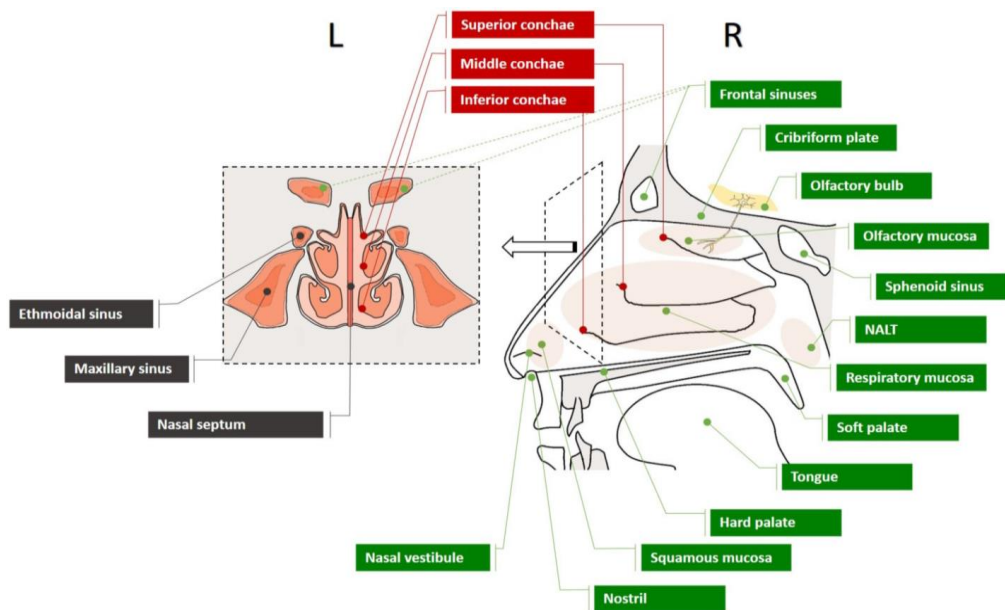


Figure 3: Advances in the Prophylaxis of Respiratory Infections by the Nasal and the Oromucosal Route

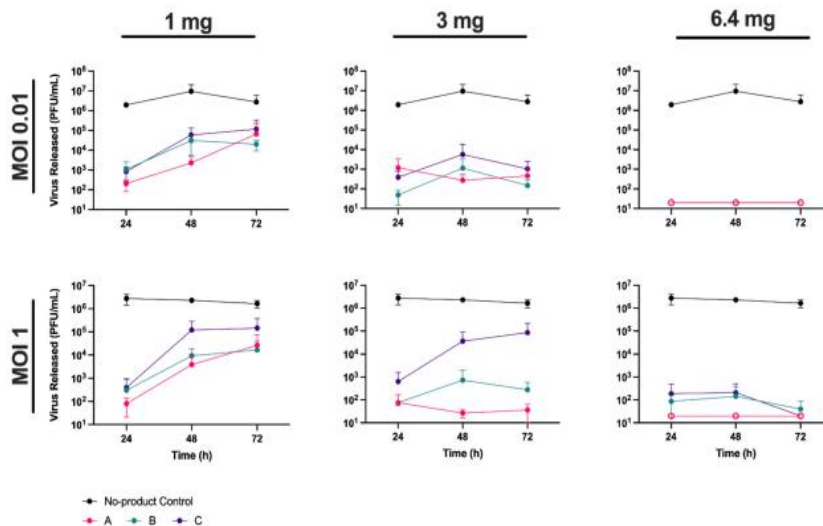


Figure 4: Output of Formulation and Evaluation of Nitric Oxide Nasal Spray

Conclusion

Airborne transmission of respiratory infections via aerosols produced by sick individuals is one of the key causes of their spread. During the ongoing COVID-19 epidemic, the need of prophylactic actions to stop such transmission channels has been underlined. While SARS-CoV-2 vaccination programs have proven to be highly effective in preventing severe disease, they do not totally prevent infection and transmission, and vaccine acceptance around the world is highly diverse due

to a variety of socio-political and economic reasons. As a result, extra preventative measures will almost certainly be required for some time. Nasal sprays, for example, can prevent the virus from being taken in and released. Because these products work as a physical barrier, they don't need to be reformulated for different virus variants or strains, and they don't need to be reformulated for different virus variants or strains. As a result, they could be used as part of infection control measures in future viral pandemics before specific vaccines are developed.

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