

Hydroxypropyl methylcellulose-based nasal sprays effectively inhibit in vitro sars-cov-2 infection and spread

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Abstract

The on-going coronavirus disease (COVID-19) pandemic has required a variety of non-medical interventions to limit the transmission of the causative agent, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). One such option is over-the-counter nasal sprays that aim to block virus entry and transmission within the nasal cavity. In this study, we assessed the ability of three hydroxypropyl methylcellulose (HPMC)-based powder nasal sprays, produced by Nasaleze, to inhibit SARS-CoV-2 infection and release in vitro. Upon application, the HPMC powder forms a gel-like matrix within the nasal cavity—a process we recapitulated in cell culture. We found that virus release from cells previously infected with SARS-CoV-2 was inhibited by the gel matrix product in a dose-dependent manner, with virus levels reduced by >99.99% over a 72 h period at a dose of 6.4 mg/3.5 cm². We also show that the pre-treatment of cells with product inhibited SARS-CoV-2 infection, independent of the virus variant. The primary mechanism of action appears to be via the formation of a physical, passive barrier. However, the addition of wild garlic provided additional direct antiviral properties in some formulations. We conclude that HPMC-based nasal sprays may offer an additional component to strategies to limit the spread of respiratory viruses, including SARS-CoV-2.

Biography

Dr. Peter Joshling is a European Biochemist and a renowned author and scientist. Nicknamed as "The Garlic King", Dr. Peter has authored a series of bestseller books on the subject of the healing power of stabilized Allicin from Garlic. Dr. Peter Joshling is Director of The Garlic Centre based in Sussex, England established in 1993 to provide an independent source of information about the medicinal, culinary, and general properties of Garlic. The Garlic Centre also advises commercial companies, research establishments, government agencies, the press, and the media. In 1997, Joshling also formed a specialty chemicals division to provide key Garlic components including Alliin, Allicin, and Ajoene for research and product formulation. Recently he led a team of chemists and chemical engineers in the invention, development and manufacturing of the world's first commercially available, stabilized and patented Allicin extract formulated into capsules, liquids, gels, and creams. His research and product development is ongoing, and he offers his expertise around the globe with safe, natural, and effective alternatives to harmful chemicals that are prescribed to people every day.

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