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Povidone-iodine and carrageenan are candidates for SARS-CoV-2 infection control

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To the Editor—Povidone-iodine, a candidate for nasal spray and oral rinse, has displayed viricidal effects on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in vitro after 30 to 60 s of exposure, even at concentrations as low as 0.45%.¹ International dental and endodontics associations have suggested povidone-iodine as a preprocedural mouthrinse to limit the spread of SARS-CoV-2.² In a Letter to the Editor of *Oral Oncology*, Mady et al³ recommend nasal and oral povidone-iodine in head and neck oncology patients and healthcare providers every 2 to 3 hours, with a maximum of 4 times per day to mitigate SARS-CoV-2 transmission. It is noteworthy that hypo- and hyper-thyroidism are possible adverse effects and contra-indications of povidone-iodine use.⁴ Nevertheless, such adverse effects are infrequent, and occur primarily after long-term use (eg, >1 year).⁴ Povidone-iodine is also contra-indicated with breastfeeding and pregnancy due to the occurrence of neonatal hypothyroidism.⁵ After excluding contra-indications, povidone-iodine mouthrinse or oral/nasal spray can reduce SARS-CoV-2 viral load in the upper respiratory tract, hampering transmission when used in conjunction with existing infection control or public health measures.

In addition to povidone-iodine, carrageenan in over-the-counter lozenges or nasal spray may be an appropriate candidate. As a sulphated polysaccharide which cannot penetrate the mucosal membrane, it acts through physically inhibiting viral attachment and entry into host cells.^{6,7} Such non-specific mechanism explains the broad viricidal activity of nasal spray against enveloped (eg, influenza and coronavirus) and non-enveloped viruses (eg, rhinovirus) in vivo, with a greater reduction of disease duration and likelihood of relapse among coronavirus patients.⁷ The latest evidence further proves the tight binding of sulphated polysaccharide to the spike protein of SARS-CoV-2.⁸ With low cytotoxicity and as a food additive classified as “Generally Recognised as Safe”, carrageenan nasal sprays demonstrate high tolerability.⁶⁻⁸

In conclusion, povidone-iodine and carrageenan possess potential for use as chemoprophylaxis or even in adjunct with the current health behaviours (hand hygiene, face mask use) and social distancing measures to synergistically suppress SARS-CoV-2 transmission.

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