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An Interesting Reflex to Combat Coronavirus Disease (COVID-19)

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ABSTRACT

The COVID-19 has reached every country in the world. Currently the main focus is on the development of vaccine and exploring possible treatment options as well as look into the prevention measures as vaccines under trial will need due time. The nutrition is neglected but important factor in immunomodulation. There is reflex which is food dependent and could serve as protective against COVID-19 infection.
With the ongoing pandemic of novel Corona Virus Disease (COVID-19) and unavailability of established treatment along with prophylaxis, all focus is on the prevention of the disease. The nutrition plays a pivotal role and still stands as an unexplored area in the management and prevention of disease. Food not only modulates immune system but also improve metabolic health. Apart from immune modulation, there is reflex which could help in combating COVID-19.

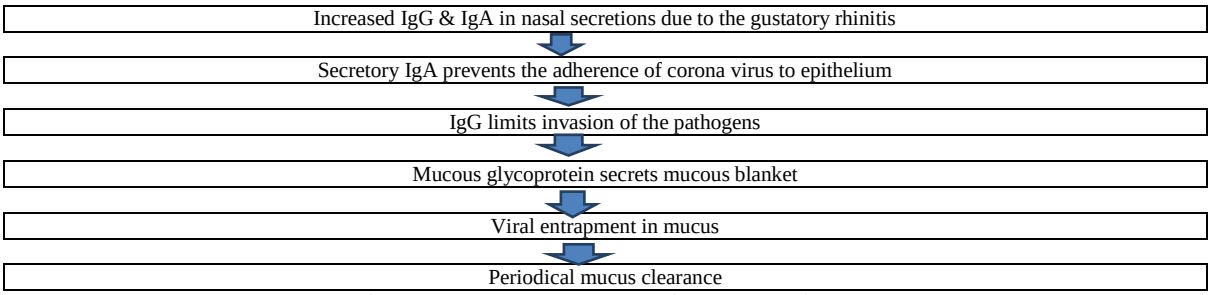
Keywords: Coronavirus disease, COVID-19, Nutrition, Reflex

BACKGROUND

Gustatory rhinitis is the secretion from nose after having some irritant food mostly spicy or hot food causing unilateral or bilateral discharge. It is an abnormal reflex due to hyperactive, cholinergic neural system. [(1-2)] It may be idiopathic, post traumatic or post-surgery. [(2-6)] The nasal secretions contain various components including mucous cell products, serous cell products, plasma proteins including IgM, IgG, IgE and inflammatory mediators. [(7)] Stimulation of the nasal secretions releases antimicrobial proteins like lactoferrin and lysozyme and secretory IgA(s-IgA) and IgG. [(8)] Secretory IgA prevents attachment of potential pathogens to mucosa while IgG limits the invasion of pathogens. [(8)]

On stimulation of these cholinergic receptors, one would have increased nasal secretions where the plasma protein found do not change but the s-IgA increased from 15% to 25 % and IgG from 2% to 4% with increase in release of anti- microbial proteins preventing the further attachment of virus and subsequent replication. [(8-10)]

Corona virus is positive sense single stranded RNA virus of family *Coronaviridae*. Life cycle of Corona Virus starts with droplet infection from carrier or case. [(11)] The virus adheres to the nasal ciliated epithelium and replicate before transporting it to nasopharynx via muco-ciliary action. [(12)] Increased cholinergic secretion leads to increased release of immunoglobulins and entrapment of virus in the mucous and periodically the mucous blanket is removed. Studies suggest that Secretory IgA reduces the Corona virus titer significantly in cell lines. [(13)]



Flow chart 1. The role of IgG and IgA in the prevention of attachment of Corona virus to the epithelium

The exact mechanism behind gustatory rhinitis is not well understood but its prevalence increase with age. [(2,14)] Studies suggest role of trigeminal sensory nerves stimulating transient receptor potential Vanilloid type-1 (TRPV 1) and Vanilloid *receptor* (*VR1*) receptors in the upper part of the aero digestive track. [(15)] Role of TRPV 1 is also extensively studied in animal model and in humans in inflammatory bowel diseases. [(16,17)]

DISCUSSION

The pandemic of COVID-19 has reached every country in the world causing a substantial damage to every aspect of mankind. In absence of established treatment, only way to prevent is to go back into the previous research and find clue in prevention or treatment as clinical trials of vaccines or recommended treatment will take time to come. Gustatory reflex could help in the prevention of the disease or at least reduce the viral load to stop community transmission.

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