Edible Confections to Reduce Cough- or Sneeze-Induced Pathogen Transmission

The Images Compare The Flight Of Respiratory Droplets After A Simulated Sneeze (Horizontal Velocity Versus Vertical Velocity). Shown Are Instantaneous Velocity Contours Of Saliva, Cornstarch And Saliva, And Mask Test Cases 185ms After The Event Starts.

Key points

• Composition thickens saliva and reduces its movement or flow in humans
• Edible ingredients may be added to lozenges, gum, candy and other confections
• Changes the fluid properties of saliva to reduce the formation of aerosol droplets

Abstract

Researchers at the University of Central Florida have developed a composition of edible ingredients that may reduce the transmissibility of airborne pathogens from person to person. Airborne-transmitted pathogens often spread through close contact between humans via respiratory functions. This includes sneezing, coughing, talking and breathing. For example, coughing causes a person to expel pathogen-laden, fine-scale saliva droplets (aerosols) into the air. People near the person may then inhale the droplets suspended in the air. Though cloth face masks and social distancing are helping to reduce the spread of pathogens such as SARS-CoV-2 (which causes the COVID-19 disease), fine respiratory particles may still linger in the air and infect another person nearby.

Consequently, the innovative UCF composition provides a way to control transmission directly from the source: saliva. When consumed as part of confections (such as lozenges, cough drops and candy) and medicine, the composition can alter the fluid properties in a person’s saliva to mitigate droplet breakup. The change results in larger droplets that travel shorter distances before falling to the ground. Thus, the formulated confections disrupt the airborne transmission of pathogens by reducing the aerosols formed during human respiratory functions.

Technical Details

The UCF invention is a composition of edible ingredients that can be used in the formulation of products such as lozenges, cough drops, gum, candy or medicines. The composition changes the fluid properties (viscosity, density, surface tension) of a person’s saliva to reduce the formation of aerosol droplets in human respiratory functions and to decrease the flow speed and transmission of airborne pathogens.

Included in the composition are thickening agents (such as cornstarch, gelatin and xanthan gum) that interact with the salivary gland to mix with and thicken the saliva in a user’s mouth. During a respiratory event, the thicker saliva droplets fall to the ground faster instead of lingering in the air. Also, the saliva reduction agents—beta blockers with palatability agents such as lemongrass, ginger and peppermint—interact with the salivary gland to decrease saliva production and further reduce the transmissibility of airborne pathogens.

Partnering Opportunity

The research team is looking for partners to develop the technology further for commercialization.
Benefits

• Reduces the transmission of airborne pathogens
• Edible and non-toxic

Applications

• Confections (such as lozenges, gum and candy)
• Medicine

Technology #34433
• US Patent Pending

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