

Applicant

Dr. Carol Hitchon, University of Manitoba

E-mail Address

Carol.Hitchon@umanitoba.ca

Project Title

Bitter taste receptors and COVID-19

Project Summary

COVID-19 has affected nearly 4 million Canadians. Some people infected with COVID-19 have very mild symptoms, others have much more severe symptoms and some people even die from COVID-19 infection. Older adults are at particularly high risk of having severe COVID-19 infection. For viruses that are spread through the air like the COVID-19 virus, the immune system in the mouth and lungs is critical to preventing severe disease. We think differences in how well the immune system attacks this new virus may partly explain why COVID-19 infection is different in different people. Some proteins that help taste bitter foods (bitter taste receptors or T2Rs) also play an important role in the body's earliest immune responses to virus infection. This system acts very fast and may stop the virus from attaching to the mouth and nose and may stop the virus from growing. T2Rs are also found on immune cells that make antibodies after COVID-19 infection (or vaccination). Differences in the genes for T2Rs affect how well they work and we think different T2R genes will also affect COVID-19 infection and maybe responses to vaccines.

Some studies suggest gene differences in one T2R may affect COVID-19 outcomes. There is no data for other T2R genes, or for T2Rs and vaccines. We will test whether there are differences in T2R genes between older adults who 1) do or do not get COVID-19 infection and who have mild or severe COVID-19 infection; 2) who do or do not make antibodies after COVID-19 infection or vaccines; 3) who have other medical conditions affecting the risk of severe infections; and 4) we will test several T2R genes. This information will tell us more about how the immune system in older adults responds to viral infections and vaccines and possibly how to predict who is at greater risk of severe infections. This will help older adults, their caregivers, and policy-makers make informed decisions about preventing and managing infections.

Keywords

bitter taste receptors, chronic medical condition, COVID-19, genetic variant, older adults, serology