SARS-CoV-2 Testing and Scientific Understanding: Science Assessment*

Summary

Testing for pathogens including for SARS-CoV-2 is an important part of an overall systematic HACCP (Hazard Analysis Critical Control Point) program to ensure food safety. Testing for SARS-CoV-2 and findings of viral or genetic material needs to be considered in the context of a wholistic risk analysis approach. Scientifically, based upon risk assessments to date, COVID-19 is not a food safety risk. Therefore, in considering appropriate risk management options, there is no need to test or restrict food imports, and no benefit in doing so. Current scientific knowledge of SARS-CoV-2 risks do not justify imposing constraints on food trade. Because SARS-CoV-2 is relatively new, it is critically important to follow the evolution of scientific knowledge and to update needed measures and practices based upon science-based principles.

Introduction

The COVID-19 disease pandemic is challenging our ability to meet global nutrition needs. Science-based decisions are needed to ensure an accessible food supply. Testing provides a key mechanism upon which science-based decisions are made to support safety in the food supply chain. In light of reports of positive findings of genetic material or virus from nucleic acid testing for the SARS-CoV-2 virus on surfaces, packaging, and food, it is necessary that the testing methodology and the specific findings be shared openly. This will allow appropriate interventions to be taken if they are needed to ensure food and human safety. Theoretically, inactive fragments, or genetic material, of the virus could remain on a surface due to environmental contamination. But these inactive fragments cannot transmit COVID-19 and most tests cannot differentiate between inactive virus fragments that are not infectious and the intact live virus that could be infectious.

The COVID-19 disease is caused by SARS-CoV-2, a single-stranded RNA (ribonucleic acid) virus. COVID-19 is a zoonotic and a transboundary disease. The principal mode of infection for humans of SARS-CoV-2 is through exposure to respiratory droplets or aerosol that carry the infectious virus. SARS-CoV-2 can only infect people when present in its intact live form. Scientific knowledge is still evolving regarding the amount of a live virus dose that could result in an infection in humans.

Testing. Understanding, and clarification:

- There are two kinds of tests. A viral test determines if an individual has an infection. An antibody test might indicate if an individual had an infection. The viral test is also used for monitoring surfaces and packaging.
- Viral tests include polymerase chain reaction (PCR) tests that look for the genetic material of the virus and antigen tests that look for the proteins. An antibody test looks for an individual's immune system's response to the virus.
- There are numerous tests and assays used globally for different purposes, including for detection, with varying performance characteristics. There are varying limits of detection and limits of quantification, varying degrees of speed, and varying measures of sensitivity (number of true positives) and specificity (number of true negatives).
- The real-time RT-PCR (Reverse Transcription-Polymerase Chain Reaction) test is considered the gold standard for identification of the SARS-CoV-2 virus. Methodologically, with an RNA finding, a determination of a live virus presence requires growing the virus in a susceptible cell culture.

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- When testing, one needs to be cautious in interpreting a test. A finding of genetic material, or a fragment, does not necessarily indicate the presence of a live virus, or of an infectious dose of the live virus.

Current scientific understanding:

- COVID-19 is not a food safety issue.
- Although SARS-CoV-2 viral genetic material potentially may be present on food, and therefore a hazard, there is no evidence of the COVID-19 disease being caused from food consumption. So, it is not a food safety risk.
- There is no evidence to date that consumption of food potentially carrying the SARS-CoV-2 virus has resulted in an infectious human illness. There is no evidence the virus can survive the digestive process and acids via passage through the stomach.
- There is no evidence to date of viruses such as SARS-CoV-2 that cause respiratory illnesses being transmitted via food or food packaging.
- Research has indicated the SARS-CoV-2 virus only lasts up to 24 hours on cardboard and 72 hours on plastic and stainless steel.
- Data does indicate the SARS-CoV-2 virus can survive on refrigerated and frozen food and packaging for up to three weeks.
- Heat at 56 degrees Centigrade, or 133 degrees Fahrenheit, inactivates or kills the SARS coronavirus at around 10,000 units per 15 minutes (quick reduction).
- Viable virus on any surface diminishes over time depending on the surface, handling, and exposure to temperature and light.
- As findings of genetic material of SARS-CoV-2 on food is not a food safety or a public health risk, such should not be a basis for restricting trade.

Governments and all food chain stakeholders must be willing to actively share testing methods and findings in order to understand the actual risks and to help determine the appropriate actions to address those risks. The global food industry has hygienic procedures in place that are a systematic preventive approach to food safety biological risks, including for viruses such as SARS-CoV-2. Precautions and actions have been taken via food safety systems through intervention methods to protect food chain workers, to minimize the risk of surface contamination, and to minimize the risk of transfer on packaging.

* Sources: WHO (World Health Organization), FAO (Food & Agriculture Organization), OIE (World Organization for Animal Health), Codex, and WTO (World Trade Organization); and associated source reference links. "*ICMFS opinion on SARS-CoV-2 and its relationship to food safety"*, 03 September 2020.

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