

Safety evaluation of human milk at the onset of the COVID-19 pandemic

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For most babies, human milk is considered the best form of early life nutrition with additional immediate and long-term benefits for health and development. During extreme circumstances and crises, it is therefore of utmost importance to monitor and protect the safety of breastfeeding and the use of human milk. At the onset of the recent COVID-19 pandemic, it was critical to rapidly establish rigorous scientific evidence to ensure that the emerging infectious agent SARS-CoV-2 is not transmitted through human milk. As soon as the WHO declared COVID19 a pandemic on March 11, 2020, we quickly assembled and activated a multidisciplinary team of human milk researchers and virologists and leveraged our existing Human Milk Biorepository called Mommy's Milk to recruit lactating women and collect milk samples – literally from day 1 of the pandemic. We and others used RT-qPCR and found that human milk does indeed occasionally contain SARS-CoV-2 viral mRNA.¹⁻³ However, a virus is more than a piece of mRNA, which alone is not able to cause disease. We therefore tested the hypothesis that viral mRNA found in human milk represents an active, replication competent virus. We validated a cell culture SARS-CoV-2 infectivity assay for use in human milk and discovered the following: (i) Presence of SARS-CoV-2 mRNA in human milk of infected women is rare. (ii) Presence of viral RNA is not the same as presence of active, replication competent virus. In fact, none of the breastmilk samples from SARS-CoV-2-infected women contained replication-competent virus, including samples that tested positive by RT-qPCR. (iii) Even if breastmilk was contaminated with SARS-CoV-2 during pumping and handling, Holder pasteurization, which is commonly used by human milk banks, inactivates the virus in contaminated breastmilk. In summary, our research has provided scientific evidence that transmission of SARS-CoV-2 from mother to infant through breastfeeding and the use of human milk is highly unlikely.^{2,3} This study was officially published on August 19, 2020, 161 days after the WHO declared COVID19 a pandemic. 161 days to develop a research strategy, secure funding, recruit subjects, collect samples, validate assays for human milk, analyze samples, run statistics, write the manuscript, go through the peer-review process and get the evidence-based information out in the public domain. Under normal circumstances, this timeline from ideation to publication would be considered remarkably fast, but it wasn't fast enough during a time of crisis. 161 days of uncertainty has led to fear-based confusion, misinformation, and increased the risk of breastfeeding cessation despite the well-documented benefits of human milk and breastfeeding.⁴ The current pandemic has uncovered the urgent and immediate need to invest in research that establishes the safety of human milk at crisis onset. We therefore call on governments, public health agencies, and the scientific community at large to establish a "rapid response task force" that is capable to rapidly and rigorously monitor and assess the safety of human milk and breastfeeding at the onset of the next global health crises.

References

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