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# Long-term infant feeding roles in triggering uncontrolled inflammatory responses



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Takeuchi et al.[1] bring once again to the forefront the protective effect of breastfeeding against the development of Kawasaki disease (KD). Moreover, KD and the multisystem inflammatory syndrome in children associated with coronavirus disease 2019 (COVID-19) (MIS-C) are very similar,[2] and it has been reported that the proportion of breastfed children who test positive for severe acute respiratory syndrome coronavirus 2 is over twice less prevalent than their formula-fed peers.[3] This data makes us wonder whether breastfeeding can somehow confer long-term benefits against MIS-C years after lactation is terminated.

Research released in the past 5 years supports the findings by Takeuchi et al. that breastfeeding is inversely correlated with the risk of complete KD and incomplete KD. These studies add to a large body of evidence gathered over time suggesting a strong (negative) correlation between breastfeeding and incidence of infection up to 10 years later.[4]

Regarding COVID-19, biomarkers that are severely increased during the cytokine burst are found to be lower in breastfed children than among formula-fed children, and very recent research suggests that breast milk may contain biochemicals able to stimulate or tolerize the mucosal immune system of the infant.[5]

All of this supports that breastfeeding might have an important role in preventing children contracting uncontrolled inflammatory response triggering infections.

It has to be established whether MIS-C and KD are distinct or represent a continuum of the same clinical syndrome. Children with MIS-C and KD similarly present lower levels of interleukin (IL)-7 and IL-8 as compared to adults with seriously acute COVID-19. However, MIS-C differ from KD in that only KD is associated with severe IL-17A-mediated inflammation.[2]

It goes without saying that further studies are necessary to establish the role of breastfeeding on modulating COVID-19 manifestations.[6] However, the findings by Takeuchi et al. may lead to a new understanding of both KD and MIS-C, as well as a more comprehensive risk assessment of children during COVID-19 depending on the infant's feeding history.

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## DATA AVAILABILITY

The authors confirm that no research data are associated with this article.

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## AUTHOR CONTRIBUTIONS

All authors contributed to the study design. S.V. conceived the study and revised the manuscript; P.C.-F. aided in the initial stages of manuscript preparation; P.M. led the writing of the manuscript; M.M. collected the data. All authors provided input into interpretation of the study results and have read and approved the final manuscript. All authors have read and agreed to the published version of the manuscript.

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## COMPETING INTERESTS

The authors declare no competing interests.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Patient consent was not required.

## ADDITIONAL INFORMATION

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