

Reply to “Cabbage and COVID-19”



To the Editor,

We appreciate the interest and comments of Soriano and Ancochea¹ regarding our papers.² Further to the suggestion that “it would be of interest to repeat their statistics conducted during the first wave of COVID-19, again with the current estimates during the ongoing second wave, or later ones,” we would like to emphasize that our geographical observation was a type of anecdotal evidence that contributed to formulating a hypothesis. In a previous paper, we found that after adjusting for potentially relevant country-level confounders, there was a negative ecological association between COVID-19 mortality and the consumption of cabbage and cucumber in European countries.³ In this study, we acknowledged that “As in any ecological study, any inference from the observed association should be made at the country level, as the possibility of ecological fallacy precludes inferences at the individual level; and that further testing in properly designed individual studies would be of interest.” Indeed, it would be useful is testing the hypothesis in robust observational studies and/or clinical trials.

Regarding our observation that COVID-19 could be considered as a disease of the Anthropocene,⁴ other authors have recently provided a more complete description of the links between the disruption of the natural ecosystems that characterize the Anthropocene and the occurrence of zoonosis.^{5,6}

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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REFERENCES

1. Soriano J, Ancochea J. Cabbage and COVID-19. *Allergy*. 2021;76:966–967.
2. Bousquet J, Anto JM, Czarlewski W, et al. Cabbage and fermented vegetables: from death rate heterogeneity in countries to candidates for mitigation strategies of severe COVID-19. *Allergy*. 2021;76:735–750.
3. Fonseca S, Rivas I, Romaguera D, et al. Association between consumption of vegetables and COVID-19 mortality at a country level in Europe. *MedRxiv*. 2020. <https://doi.org/10.1101/2020.07.17.20155846>
4. O'Callaghan C, Anto J. COVID-19: The Disease of the Anthropocene. *Env Res*. 2020;187:109683.
5. Morens DM, Fauci AS. Emerging pandemic diseases: How we got to COVID-19. *Cell*. 2020;182(5):1077–1092.
6. Roche B, Garchitorena A, Guegan JF, et al. Was the COVID-19 pandemic avoidable? A call for a “solution-oriented” approach in pathogen evolutionary ecology to prevent future outbreaks. *Ecol Lett*. 2020;23(11):1557–1560.