Comments on COVID-19, a double-edged sword for the environment: a review on the impacts of COVID-19 on the environment

Mohamedazeem M. Mohideen¹ · Yong Liu¹

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We are writing this article to comment on a review written by Hossein D. Atoufi et al., titled “COVID-19, a double-edged sword for the environment: a review on the impacts of COVID-19 on the environment” reporting that “Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) originated in Wuhan, China, in December 2019.”

Presently, life is moving toward a new normal. Socioeconomic activities are getting back on track, with restrictions on international travel, industries, and educational institutions slowly being lifted. Besides all the unfortunate situations caused by COVID-19, looking through the lens of the pandemic has taught humans how to love, care, live peacefully, and enjoy nature; most importantly, it has taught us the value of community. However, the author’s statement about the origination of COVID-19 is from China without any proper references creating chaos. That might arouse hate toward Chinese people in the international community, especially among young people, who do not have much background on the actual origins of COVID-19. There is no official report from the World Health Organization (WHO) stating that the origin of COVID-19 is from China. In fact, the WHO investigation team on the origin of COVID-19 said it is still unclear (Mallapaty 2021). Many hypotheses revolve about when, where, and how the pandemic started, and it is still a mystery to find out. The first COVID-19 case was reported on December 8, 2019, in Wuhan, China, so it was not meant to be the origin place of the pandemic (Wu et al. 2020). In contrast, studies reported an unexpected very early transmission of COVID-19 between asymptomatic individuals in European countries several months before the first

patient was detected in China. To be more precise about the hypothesis and the author’s wrong statement about COVID-19 origination, we gave a detailed interpretation with proper reference by published original research articles.

In Italy, the first official case of COVID-19 was announced on February 21, 2020, in Lombardy to a 38-year-old man with no history of possible contact with positive cases within Italy or overseas. Apolone et al. examined the presence of SARS-CoV-2 receptor-binding domain (RBD)-specific antibodies from the lung cancer screening trial enrolled by 959 asymptomatic healthy volunteers from September 2019 to March 2020 to find out the actual initial spread started in Italy. An unexpected result was that 111 of 956 (11.6%) healthy volunteers were detected positive for SARS-CoV-2 RBD antibodies well before February. In addition, all 111 SARS-CoV-2 RBD-positive samples were tested for anti-SARS-CoV-2 functional neutralizing antibodies (NAbs) and traced six SARS-CoV-2 RBD-positive patients tested positive in the qualitative cytopathic effect-based microneutralization test. Among the six NAbs-positive patient samples, four were taken in October, one in November, and one in February. Notably, three of the Nabs positive were from Lombardy (Apolone et al. 2020). In another study, COVID-19 antibodies were present in the skin specimen in Italy which also led us to confirm the unexpected earlier circulation of COVID-19 (Gianotti et al. 2021). In November 2019, a 25-year-old Italian woman from Milan reported urticarial plaque-like dermatosis on the arm with a moderate sore throat. In July 2020, the group performed the skin biopsy again because the histopathological features were matched with the minichilblain patterns and confirmed that the patient was immunohistochemically positive for SARS-CoV-2 nucleocapsid antigen. Several studies have been reported on monitoring sewage samples as an effective tool to understand the spread of SARS-CoV-2 among the human populations (Ahmed et al. 2020; Hata et al. 2020; Wurtzer et al. 2020; Randazzo et al. 2020). La Rosa et al. investigated the trace of genomic SARS-CoV-2

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✉ Yong Liu
yongliu@mail.buct.edu.cn

¹ Beijing Key Laboratory of Advanced Functional Polymer Composites, College of Materials Science and Engineering, Beijing University of Chemical Technology, Beijing 100029, China

through PCR analysis from the sewage samples collected from wastewater treatment plants between October 2019 and February 2020. The 40 samples were detected for SARS-CoV-2 RNA in nested RT-PCR (45%) and real-time RT-PCR (65%). Fifteen of the 40 samples were examined positive by both tests. Among them, eight samples were collected before mid-December 2019 (La Rosa et al. 2021).

France reported its official first COVID-19 cases on January 24, 2020 (Stoecklin et al 2020). When China announced its first official case of COVID-19, France was facing severe seasonal influenza infection. Both SARs-CoV-2 and influenza infections have the similar symptom, which led the researchers to investigate the earlier circulation of SARS-CoV-2 in France. RT-PCR test performed retrospectively on the stored respiratory sample of 42 years older man, hospitalized by December 2019, recorded positive for SARS-CoV-2 infection, even though the patient has no link to China and lack of foreign travel (Deslandes et al. 2020). The Inserum researchers retrospectively analyzed the 9144 serum samples collected between November 4, 2019, and March 16 2020 across 12 regions in France. They performed an enzyme-linked immunosorbent assay (ELISA) and micro-neutralization assay to detect the SARS-CoV-2 antibodies and neutralizing antibodies. Surprisingly 353 of the 9144 samples identified positive for SARS-CoV-2 antibodies in ELISA. The proportion of positive ramped up by each month from November 2019 1.9%, December 2019 to January 2020 1.3 to 5.0%, and from February 2020 to the first half of march 5.2 to 6.7%. Forty-four patients identified positive for neutralizing antibodies. Among them, 13 samples collected between November 5, 2019, and January 30, 2020, were also positive in ELISA. This result suggests that the SARS-CoV-2 infection has been in circulation as early as November 2019 in France (Carrat et al. 2021).

Similarly, a group of researchers at the US Centers for Disease Control and Prevention (CDC) investigated with 7389 blood donations samples collected between December 13, 2019, and January 17, 2020, to trace the presence of reactive SARS-CoV-2 antibodies. They found that 106 samples were reactive to pan-immunoglobulin ELISA. Of those, 90 were subjected to further test and have confirmed 84 samples with neutralizing activity, 1 sample recorded S1 binding activity, and one had RBD/Ace2 blocking activity, confirming that the samples have reactive antibodies against the SARS-CoV-2. Their finding suggests that the USA has earlier present COVID-19 in December 2019 than their first official case on January 21, 2020, who subjected to be in a returned travel from China (Basavaraju et al. 2020).

The first person subjected to COVID-19 in Wuhan does not have any recent travel history overseas (Lau et al. 2020), and then how could be above research resulting in the earlier circulation of COVID-19 in Italy and France before December 2019? However, the earlier exposure to COVID-19 in

these European countries does not mean to be an origination place, but it supports the idea that SARS-CoV-2 was spreading outside Wuhan before the first official reported case said the WHO investigation team member Peter Ben Embarek (Mallapaty 2021). Further, the WHO investigation team reported that the virus has been transformed from bat to human, but the intermediate animal that passes the virus is unidentified (Mallapaty 2021; Sun et al. 2020). Therefore, without knowing the intermediate zoonotic host pinning down the exact origin place of COVID-19 continues to be questionable.

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