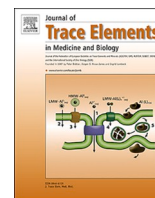




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Editorial

The different faces of inorganic elements in SARS-CoV-2 infection



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Severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) has dramatically affected the world since December 2019. SARS-CoV-2 variants have been responsible for millions of deaths and the so-called COVID-19 pandemic has disrupted the social and economic life worldwide for at least two years. It is still hard to bring the situation under control although international research cooperation has been exemplary and allowed rapid advances to fight against COVID-19 and to identify the main comorbidities. Indeed, the first candidate vaccines were available within less than five months. Epidemiological studies demonstrated that severe COVID-19 forms were associated to increased age, cancer, diabetes, cardiac or lung diseases [1,2]. Essential trace elements such as iron, manganese, selenium, zinc, copper and toxic elements such as arsenic, lead, cadmium play important roles in viral infections, such as activation of immune cells, production of antibodies, inhibition of virus replication, as well as in inflammation and oxidative burst processes. Therefore, they may play a crucial role in COVID-19 pandemic. This was why the FESTEEM (Federation of European Societies on Trace Elements and Minerals) board decided to prepare a special issue on this topic.

The aim of this special issue was to gather manuscripts submitted to the Journal of Trace Element in Medicine and Biology and related to the relationships between essential and toxic elements and COVID-19.

Currently, twelve articles from nine countries, six reviews and six original research manuscripts, have been included in this special issue. Other manuscripts will join this issue.

To summarize, these articles confirm that most of patients with COVID-19 exhibit selenium, zinc, iron, calcium and sodium deficiencies and high copper, lead, arsenic and mercury concentrations [3–7]. Some of these modifications were associated with inflammatory biological index [7]. Essential trace element status improved after standard treatment in moderate COVID-19 form [6,7]. The effectiveness of trace element supplementation, particularly zinc, selenium and vanadium remains to be demonstrated [8–10]. Interestingly common symptoms of COVID-19 such as cough, fatigue, shortness of breath, and myalgia significantly improved under boron therapy [11]. The potential role of

metalloomics in the identification of new variants of SARS-CoV-2, the understanding of the disease and the development of new treatment strategies was discussed [12] as well as the potential impact of nano-assays for virus detection and the mechanism and inhibitory effects of various nanoparticles against SARS-COV-2 [13].

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