FAQ: Zinc Supplementation, Immunity, and COVID-19

Zinc is an essential mineral. Ever since zinc deficiency was discovered as a human disease characterized by hypogonadism, dwarfism, various skin lesions and immunodeficiency, there has been a robust interest in understanding the mechanism by which zinc and its transporters are involved in human immunity.1,2 In developing countries, there is evidence that zinc supplementation may reduce the risk of pneumonia and diarrhea in children.3 There are two systematic reviews that suggest zinc supplementation may reduce the duration of symptoms of the common cold, which is often caused by a coronavirus. One of these reviews included 17 trials that compared zinc supplementation to placebo and found that patients receiving zinc had a shorter duration of cold symptoms (mean difference of 1.65 days, 95% confidence interval -2.5 to -0.81); however, heterogeneity was high among the trials and this effect was not seen in children.4 Another systematic review included 13 placebo-controlled comparisons and found that only those trials with daily doses of over 75mg showed a reduction in the duration of colds.5 The heterogeneity of the studies included in this systematic review was also high; therefore, these results should be confirmed in further studies. There are in vitro studies which show Zinc ions inhibit SARS-coronavirus (SARS-CoV) replication in viral culture.6 Currently, there is no available data to suggest these in vitro findings would translate to a clinical therapeutic. These kind of in vitro studies help guide future drug development research and are not meant to guide clinical practice.

Ultimately, these data have served as the basis for testing whether oral zinc supplementation could serve as a potential treatment for COVID-19. There are currently two trials recruiting patients to study the effects of zinc supplementation in COVID-19. One trial, enrolling by invitation only, is evaluating whether ascorbic acid plus zinc gluconate, or each alone, can decrease the duration of symptoms and prevent disease progression in patients with a new diagnosis of COVID-19.7 The second study, based in Turkey, is currently recruiting patients to evaluate the effect of hydroxychloroquine plus vitamins (including zinc) in the prevention of COVID-19.8

In regards to dosing, humans are tolerant of doses up to 10 times the recommended daily dose by the WHO (daily recommended dose = 8-11mg / day for adults). However, high doses can cause gastrointestinal side effects including nausea, vomiting, diarrhea, and a bad taste. It is also important to note that intranasal zinc formulations can cause irreversible hypoglosia and anosmia.9 In addition, zinc supplements can also interact with certain medications, including some oral cephalosporins, fluoroquinolones, tetracyclines and some antivirals.

Based on the fact that there is no clear evidence that zinc has any positive impact on the clinical course of patients with COVID-19 and there are known adverse events and drug interactions, we do not recommend zinc supplementation for the treatment or prevention of COVID-19. We continue to recommend supportive care for COVID-19 as also recommended by the CDC, IDSA, and SCCM.10,11

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References: