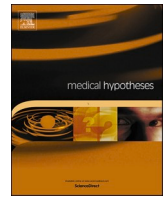




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## Letter to Editors

**Prolactin and susceptibility to COVID-19 infection**

## ARTICLE INFO

## Keywords

COVID-19  
Prolactin  
Coronavirus  
Smoking

*Dear editor*

Article by Sen et al., [1] tried to explain the beneficial effect of prolactin for the treatment of COVID-19. The author has mentioned that lower blood prolactin levels in obese patients and adult men increase the susceptibility and severity of COVID-19 infection. On the other hand, the author suggested that cigarette smokers, children, and pregnant women have due to higher prolactin level are at low risk for COVID-19.

The prolactin levels after smoking is still debated. Various studies documented that prolactin secretion inhibits in chronic cigarette smokers [2]. Chronic exposure to nicotine inhibits prolactin secretion by activation of nicotinic receptors of the dopamine neurons, releasing dopamine as a prolactin-inhibitor factor. Moreover, nicotine can reduce prolactin gene expression in rat pituitary cell lines [3]. Hence, prolactin concentration is lower in chronic smokers compared with non-smokers. This may contribute to the decreased rate of fertility in chronic smokers. Furthermore, significant reductions in prolactin concentrations are found to happen in women who smoke during pregnancy and breastfeeding smokers [4]. However, some other studies reported that prolactin secretion increase after smoking [5].

The low hospitalization rate in smoker COVID-19 patients might be due to the anti-thrombosis and anti-inflammatory effects of alpha particles and nicotine in the smoke [6]. Despite the protective effect of smoking against COVID-19, it is a significant risk factor for bacterial and viral infections [6]. It has been reported that smokers 2 times likely to develop pneumonia, and 5 times to develop influenza. Evidence showed that smoking is related to more severe disease, a greater risk of ICU admission, and more mortality in cases with COVID-19 admitted to hospital [7,8]. Hopkinson et al., by review the symptom of more than 2.4 million people, showed that smokers had a higher COVID-19 symptom burden, and were more likely to need hospitalization compared with non-smokers [7].

The author referred to the Kopelman et al., study and showed low levels of blood prolactin in obese patients. However, this study reported the low levels of prolactin in obese non-responders (patients without prolactin response to symptomatic hypoglycemia) [9]. Some studies showed that basal prolactin concentrations are similar in obese and normal-weight humans, whereas some others reported high levels [10] or low levels in obese [11]. However, chronic inflammation, impaired

immune responses, change of gut microbiota, high ACE2 expression, insulin resistance, hyperglycemia, excess fat deposition, leptin resistance, and decreased adiponectin make obese patients susceptible to COVID-19 infection [12,13].

Numerous molecular and physiological reasons have been reported for the low prevalence of COVID-19 among children and women [14,15]. Although pregnant women have high levels of prolactin, they are more susceptible to COVID-19 compared to the general population. Other studies reported that pregnant women and non-pregnant have similar susceptibility for COVID-19 [16].

**Consent statement/Ethical approval**

Not required.

**Funding**

No source of funding or sponsorship.

**Declaration of Competing Interest**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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<https://doi.org/10.1016/j.mehy.2021.110662>

Received 7 April 2021; Received in revised form 9 July 2021; Accepted 8 August 2021

Available online 10 August 2021

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