



Letter to the Editor

Fight COVID-19 depression with immunity booster: Curcumin for psychoneuroimmunomodulation

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Dear Editor,

Beyond infection, the COVID-19 pandemic has affected individuals through associated anxiety and stress and caused a collateral damage (Tandon, 2020). Real and perceived fear of infection and distorted daily activities invites psychiatric illness including depression (Banerjee and Viswanath, 2020; Kumar and Somani, 2020; Tandon, 2020). Void for specific therapeutic measures also contributed to this psychotic illness. A 'tsunami of psychiatric illness' will follow as predicted by various organizations and imminent experts (Tandon, 2020). Therefore, attention towards this mental health crisis approaching worldwide is necessary (Tandon, 2020). Along with preventive measures, incorporating 'immunity boosters', including established food ingredients/herbs, are advised. Recently, uncovering the potential of Ayurveda was exigencies to combat COVID-19 outbreaks through modulation of psychoneuroimmune (PNI) response (Rajkumar, 2020). Curcumin is the bioactive component of turmeric, one of the key ingredients of prescribed ayurvedic interventions and spices used in meal preparation in South-East Asia (Rajkumar, 2020; Vishvakarma, 2014). Therefore, critical evaluation of the psychopharmacological potential of turmeric in COVID-19-pandemic-associated psychosomatic disorders is warranted.

The inter-dependent nature of immunity and psychological state is established and decides the outcome of disorders. An immune response can be largely affected by mental well-being, and depression can negatively affect its outcome (Rajkumar, 2020; Zalachoras et al., 2020). Targeting either one of depression or immunity may face insufficiency; dual-acting drug hold promise to improve health amid COVID-19 pandemic. Known for immunoboosting aptitude, curcumin can alleviate the COVID-19 associated ill-effects including cytokine storm (Liu

and Ying, 2020). Alleviating psychological stress by curcumin will also adjunct its immunoboosting potential.

Curcumin can avert the anxiety and the stress-driven manifestation of depression through modulation of the monoaminergic troupe (dopamine, glutamate, serotonin, and noradrenaline) by curcumin (Zalachoras et al., 2020). Depression-disorders in COVID-19 prevention measures-driven social distort are possibly brought by oxidative stress (Rajkumar, 2020). Curcumin, through Nuclear factor erythroid-2-related factor 2 (Nrf2), can prevent such stress and improve antioxidant Glutathione (GSH) production (Zalachoras et al., 2020). GSH prevents the physiological damage to brain cells during stress. Nrf2 also balances the tone of the immune response (Lopresti and Drummond, 2017; Zalachoras et al., 2020). Major depression disorders (MDD) associate with disturbances in the hypothalamus-pituitary-adrenal (HPA) axis. Curcumin can correct the HPA disturbances and avert elevated glucocorticoids, their receptor as well as inducers (cortisone and adrenocorticotropic hormone) (Lopresti and Drummond, 2017).

Along with evident immunomodulator, turmeric component, especially curcumin exhibit antidepressant activity, and improve cognitive/mood function (Lopresti and Drummond, 2017). The potential of curcumin containing nutraceutical in COVID-19 has been predicted both through PNI modulation and 'meaning response' (Rajkumar, 2020). Moreover, curcumin can alleviate the overt inflammatory consequence (Vishvakarma, 2014; Soni et al., 2020), even those associated with COVID-19 (Liu and Ying, 2020), and thus will improve physical well-being. Ayurvedic utilization of turmeric as a concoction, spice and/or golden milk (turmeric in warm milk) provide PNI benefit through alleviated anxiety/depression (Rajkumar, 2020) along with modulation of neurotransmission (through monoamine and gamma-aminobutyric acid) (Zalachoras et al., 2020). Reports indi

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