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Capacity of NASVAC, a repurposed drug to prevent SARS-CoV-2 infection

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Infection with SARS-CoV-2 and the ensuing pathology of COVID-19 have devasted the entire world even about 2 years after its first incumbency. All these are happening after strict employment of public health modalities and availability of a prophylactic vaccine. As people suffering from previous COVID-19 and receiving prophylactic vaccines for two times being infected with SARS-CoV-2 again and considerable numbers have died even in developed countries. These facts expose limitation of available vaccine and indicate need of developing new and novel methods to control SARS-CoV-2 infection. Based on these realities and after exploring underlying mechanisms of acquiring SARS-CoV-2, we provided importance to accelerate innate immunity in nasal, buccal, and oral mucosa with a safe and strong modulator of innate immunity. In the course of more 3 decades of our international collaboration with Cuba and Japan, we developed a nasal vaccine (NASVAC by name and contain two antigens of HBV, HBsAg and HBcAg) for hepatitis virus that induces almost all pro inflammatory cytokines related to innate immunity. In a preliminary study, we found that administration of NASVAC via nasal and sublingual routes was completely safe. The subjects who received NASVAC by nasal and sublingual routes were not infected by SARS-CoV-2 over the period of usage. Study on mechanism of action of NASCA, we found that administration of NASVAC resulted in significantly increased production of interferon-gamma, TNF-alpha, TGF-beta, interleukin-2&4 compared before administration of NASVAC ($p<0.05$). The pattern of cytokine responses and absence of infection or mild COVID-19 of the subjects involved in the study are preliminary evidence indicating that this product may prevent or suppress SARS-CoV-2 infection at the initial stages of SARS-CoV-2 acquisition and/or replication by stimulating innate immunity. Further trials to confirm the capacity of NASVAC as pre/post exposure prophylaxis or pre-emptive therapy of SARS-CoV-2 infection is urgently required.

Biography

Mamun Al Mahtab graduated from Mymensingh Medical College in 1995. He did MSc in Gastroenterology from University of London in 1998 and subsequently did MD in Hepatology from Bangabandhu Sheikh Mujib Medical University in 2006. He is Fellow of the Royal College of Physicians of London, Royal College of Physicians of Ireland and Indian College of Physicians. He is currently working as the Head, Division of Interventional Hepatology, Bangabandhu Sheikh Mujib Medical University. He is also a visiting professor at the Department of Gastroenterology & Metabology, Ehime University, Japan and Member, Board of Studies, Department of Gastroenterology, All India Institute of Medical Sciences, Rishikesh, India.

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