

Dimethyl fumarate for COVID-19

To the editor,

The menace of COVID-19 pandemic has entered into the second year, and still it is expanding, evading every possible medical therapy being offered. There has been no specific antiviral therapy for SARS CoV-2 discovered to date. It has been found that COVID-19 induces immune dysregulation, hyperinflammation and oxidative stress (cytokine storm), which leads to patient morbidity and even mortality. The alleviation of cytokine storm is a logical approach to decrease the mortality. Dexamethasone (corticosteroid) has been successfully used in the treatment of COVID-19.¹ Dimethyl fumarate (DMF) has comparable immunosuppressive properties like corticosteroids and has shown effectiveness in COVID-19. DMF is a US Food and Drug Administration approved drug for psoriasis and multiple sclerosis. Randomised Evaluation of COVID-19 Therapy trial is the UK's national clinical trial underway that aims to identify the beneficial treatments in hospitalised patients with COVID-19 and has included DMF in its early phase assessment at an oral dose of 120 mg every 12 hours for 2 days followed by 240 mg twice a day for 10 days.

There have been reports of DMF use in patients of multiple sclerosis who developed a self-limiting SARS-CoV-2 infection without cessation of the drug and any relapse.² DMF prevents the nucleotide-binding oligomerisation domain, leucin-rich repeat containing proteins-3 (NLRP 3) inflammasome activation and the process of pyroptosis, thereby reducing SARS-CoV-2 induction

of inflammasome and alleviating cytokine storm.³ DMF has also demonstrated antiviral and anti-inflammatory effects.⁴

DMF or fumaric acid esters have been used in dermatology in conditions like plaque psoriasis, pustular psoriasis, scalp or nail psoriasis, psoriatic arthritis, granuloma annulare, sarcoidosis and necrobiosis lipoidica. Abdominal pain, diarrhoea, nausea and malaise are the common side effects, and transaminitis, proteinuria lymphocytopenia, leucocytopenia are the rare adverse events.

It has been suggested by Brownlee *et al*⁵ to start DMF in children and young adults with multiple sclerosis during COVID-19 pandemic. The evidence to date has not shown any ill effect on severity of COVID-19, thereby allowing its continuation during the pandemic; however, there is a possible theoretical risk due to lymphopenia. The antiviral effect and cytokine storm alleviation makes DMF a potential candidate drug to use in patients with moderate to severe COVID-19 or be continued in the patients for its dermatological and neurological indications. Although there are only case reports regarding its safe and effective use in COVID-19, however results are awaited from the ongoing trial studies in the future for its validated use in this pandemic.

Yashdeep Singh Pathania 

Correspondence to Dr Yashdeep Singh Pathania, Department of Dermatology, Venereology and Leprology, All India Institute of Medical Sciences, Jodhpur, 342005, India; yashdeepsinghpathania@gmail.com

Contributors Author (YSP) prepared and finalised the manuscript.

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ORCID iD

Yashdeep Singh Pathania <http://orcid.org/0000-0003-3462-1625>

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