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Riview On: Delta Plus Variant Of Covid 19

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ABSTRACT

A combination of mutations (changes) in a virus results in various variants. VoCs are variants that have a much greater transmissibility, can escape vaccine response partially or can become resistant to established drugs. The Delta Plus variant is a further mutated form of the Delta variant (B.1.617.2) which originated in India and was predominantly responsible for its second wave. Cases of the Delta Plus variant have been found in Ratnagiri and Jalgaon districts of Maharashtra. One-odd cases have been found in Kerala and Madhya Pradesh. The latest available data from the end of May and early June indicates the prevalence of the Delta variant in the U.S., the Netherlands and Germany was in the 2% to 10% range. Surveillance data from the U.S., Germany and the Netherlands indicates the Delta variant is growing by about a factor of 2 to 3 every two weeks. The treatment for those infected by the SARS-CoV-2 Delta variant is as per others infected by COVID-19.

KEYWORDS Delta plus variant, SARS-CoV-2, Covaxin, Covishield

INTRODUCTION

The Union Ministry of Health and Family Welfare (MoHFW) issued a press statement June 22, 2021 terming the Delta Plus variant of the novel corona virus as a 'variant of concern' (VoC). This was less than an hour after Union health secretary Rajesh Bhushan had termed it as just a 'variant of interest' (VoI) in a press conference. A combinations of mutations (changes) in a virus results in various variants. VoCs are variants that have a much greater transmissibility, can escape vaccine response partially or can become resistant to established drugs.

The Delta Plus variant is a further mutated form of the Delta variant (B.1.617.2) which originated in India and was predominantly responsible for its second wave. The Delta Plus has an additional mutation K417N which was also found in the Beta variant that was responsible for a massive surge in cases in South Africa. Moreover, this additional mutation is also found in the critical region of the virus receptor binding domain through which it gains entry into the human cell. So far, other than Delta Plus variant, only four more have been designated as VoCs by the World Health Organization. These include the Alpha variant (originated in the UK), Beta variant (originated in Brazil) and Gamma variant (originated in South Africa) and the Delta variant. The rest are VoIs. VoCs have been typically known to cause multiple waves in various countries. The

VoIs may Variants of High Consequence (VOHC) Currently there are no SARS-CoV-2 variants that rise to the level of high consequence.

Delta Plus in India

Delta Plus variant in the press meet and said it was not a variant of concern yet. As many as 22 cases of the Delta Plus variant have been found in Ratnagiri and Jalgaon districts of Maharashtra. One-odd cases have been found in Kerala and Madhya Pradesh. An advisory had been issued to these states, the Delta Plus variant had also spread to the United States, UK, Portugal, Switzerland, Japan, Poland, Nepal, China and Russia.

Later, the MoHFW issued a press release saying the Delta Plus was a VoC. According to the release, this new variant had increased transmissibility, stronger binding of the virus to receptors of lung cells and potential reduction in response to a potential drug against the virus.





There was no clarification as to why was there was a difference in the statement of the Union secretary and his ministry. Phone calls made by *Down To Earth* to All India Institute of Medical Sciences (AIIMS), New Delhi's director Randeep Guleria and Indian Council of Medical Research director-general Balram Bhargava went unanswered.¹

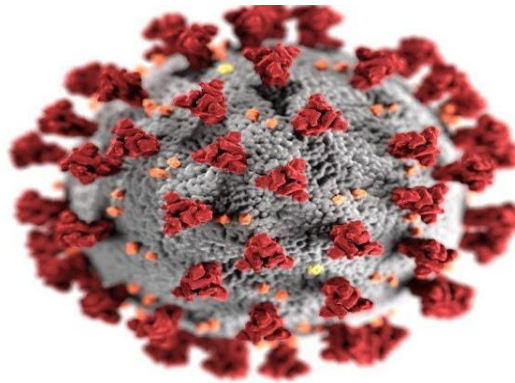
VARIANTS OF CONCERN ²

Table 1. World Health Organization's new labels for Covid VOC

WHO label	Pango lineage	GISAID clade/lineage	Next strain clade	Earliest documented samples	Date of designation
Alpha	B.1.1.7	GRY (formerly GR/501Y.V1)	20I/S:501Y.V1	United Kingdom, September 2020	December 18, 2020
Beta	B.1.351	GH/501Y.V2	20H/S:501Y.V2	South Africa, May 2020	December 18, 2020
Gamma	P.1	GR/501Y.V3	20J/S:501Y.V3	Brazil, November 2020	January 11, 2021
Delta	B.1.617.2	G/452R.V3	21A/S:478K	India, October 2020	VOI: April 4, 2021, VOC: May 11, 2021

Table 2. New names proposed for Covid Variants³

Country/region	Scientific name	WHO name
 Kent, UK	B.1.1.7	Alpha
 South Africa	B.1.351	Beta
 Brazil	P.1	Gamma
 India	B.1.617.2	Delta



“Fig”, Structure of Covid 19 Delta plus variant

EPIDEMIOLOGY

Emerging research suggests the variant may be more transmissible than previously evolved ones. Whether the effectiveness of currently-deployed vaccines is affected remains under investigation. Surveillance data from the Indian government's Integrated Disease Surveillance Programme (IDSP) shows that around 32% of patients, both hospitalized and outside hospitals were aged below 30 in the second wave compared to 31% during the first wave, among people aged 30–40 the infection rate stayed at 21%. Hospitalization in the 20-39 brackets increased to 25.5% from 23.7% while the 0-19 range increased to 5.8% from 4.2%. The data also showed a higher proportion of asymptomatic patients were admitted during the second wave, with more complaints of breathlessness. The latest available data from the end of May and early June indicates the prevalence of the Delta variant in the U.S., the Netherlands and Germany was in the 2% to 10% range. Surveillance data from the U.S., Germany and the Netherlands indicates the Delta variant is growing by about a factor of 2 to 3 every two weeks with respect to the Alpha variant, so it is expected to become the dominant variant around July in this countries.⁴

SYMPTOMS

- Headaches
- Stomach pain
- Sore throats
- Runny noses
- Fever
- Nausea
- Vomiting
- Loss of appetite
- Loss of hearing
- Joint pain

TREATMENT

The treatment for those infected by the SARS-CoV-2 Delta variant is as per others infected by COVID-19.

Vaccine efficacy

ICMR found that convalescent sera of the COVID-19 cases and recipients of Bharat Biotech's BBV152 (Covaxin) were able to neutralize VUI B.1.617 although with a lower efficacy.⁵ Anurag Agrawal, the director of the Institute of Genomics and Integrative Biology (IGIB), said the study on the effectiveness of the available vaccines on lineage B.1.617 suggests that post-vaccination, the infections are milder. Initial positive neutralization studies of B.1.617, with both post-Covaxin or Covishield sera, are correlatable with the milder disease during post-vaccination breakthrough infections. This is positive while we get quantitative data for a better understanding of infection protection.⁶

CONCLUSION

The new Delta plus variant (B.1.617.2.1 or AY.1) has been formed due to a mutation in the Delta, or B.1.617.2, variant. Delta plus has a K417N mutation, alongside the earlier Delta mutation in N501Y. What has researchers concerned is that these two mutations could make the virus more transmissible as well as help it evade human-made antibodies such as Casirivimab and Imdevimab, which are the mark of monoclonal antibody cocktails currently under emergency use for Covid treatment in India. The Germany and Netherlands indicates the Delta variant is growing by about a factor of 2 to 3 every two weeks with respect to the Alpha variant, so it is expected to become the dominant variant around July in these countries.

ABBREVIATION

MoHFW- Ministry of Health and Family Welfare

SARS-CoV-2- severe acute respiratory syndrome corona virus 2

ICMR-Indian Council of Medical Research

VOC- Variant of Concern

WHO-World health Organization

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