

PHARMAMEDICAL TREND ANALYSIS (PMTA)

VOLUME 1, ISSUE 1, JULY 2022



Genetic Variation of COVID-19 and Vaccine Development

Different Vaccines and their effects

Plant-Based Adjuvanted Covid-19

Moderna Vaccine Shot Against the Flu and COVID

PharmaMedical Trend Analysis

Editor: Dr Md Anawar Hossain,
Assistant Editor: Ishrat,
Designer: Dr Md Anawar Hossain,
Marketing Manager: Reijili Hilder

PharmaMedical Trend Analysis (ISSN No: xxxx) is an online and print format publication published bi-monthly (six issue per year). This publication brings forward the recent innovation and burning issues in pharmaceutical and medical science. Therefore, it provides interesting information for both pharmaceutical industry professionals and medical practitioners.



Published by Ariban
PublicationTech, Queensland 4304,
Australia,
E-mail: ariban.pubtech@gmail.com,
Tel: +61477071389, Website:
<https://pharmamedicaltrendanalysis.com>,
Facebook: [facebook.com/Ariban
PublicationTech](https://www.facebook.com/AribanPublicationTech),

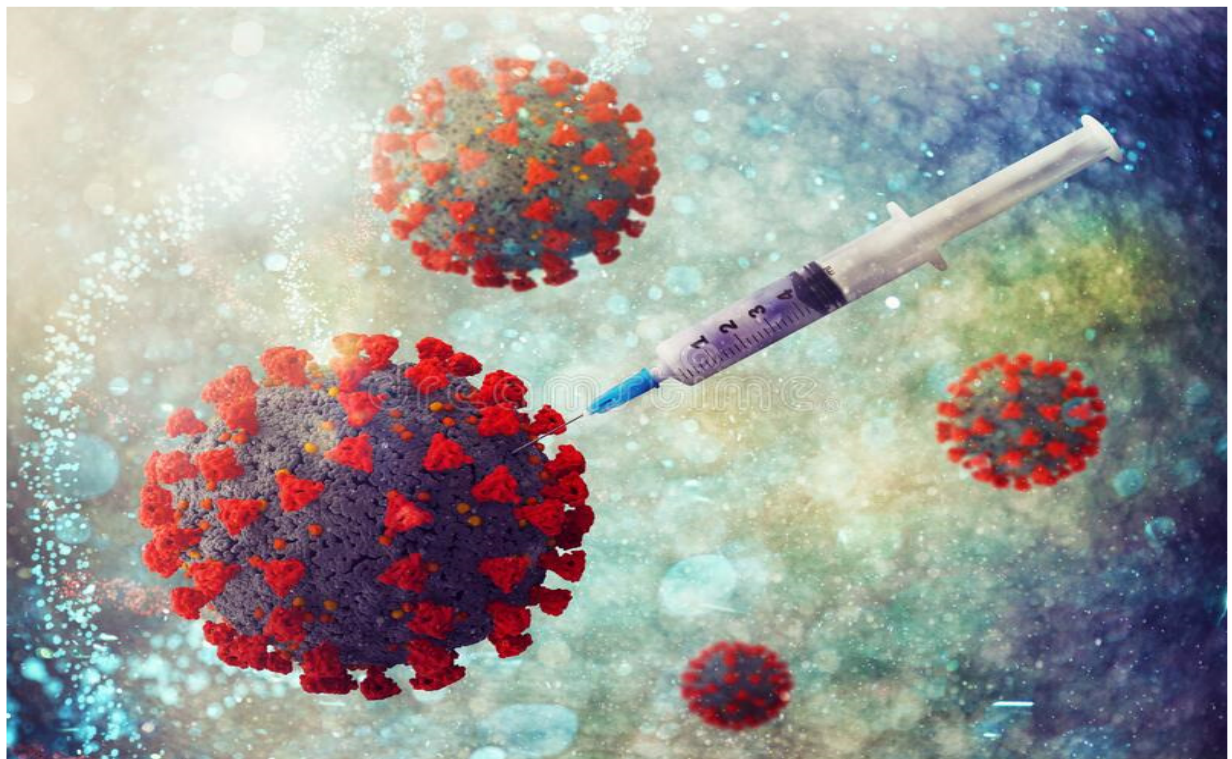
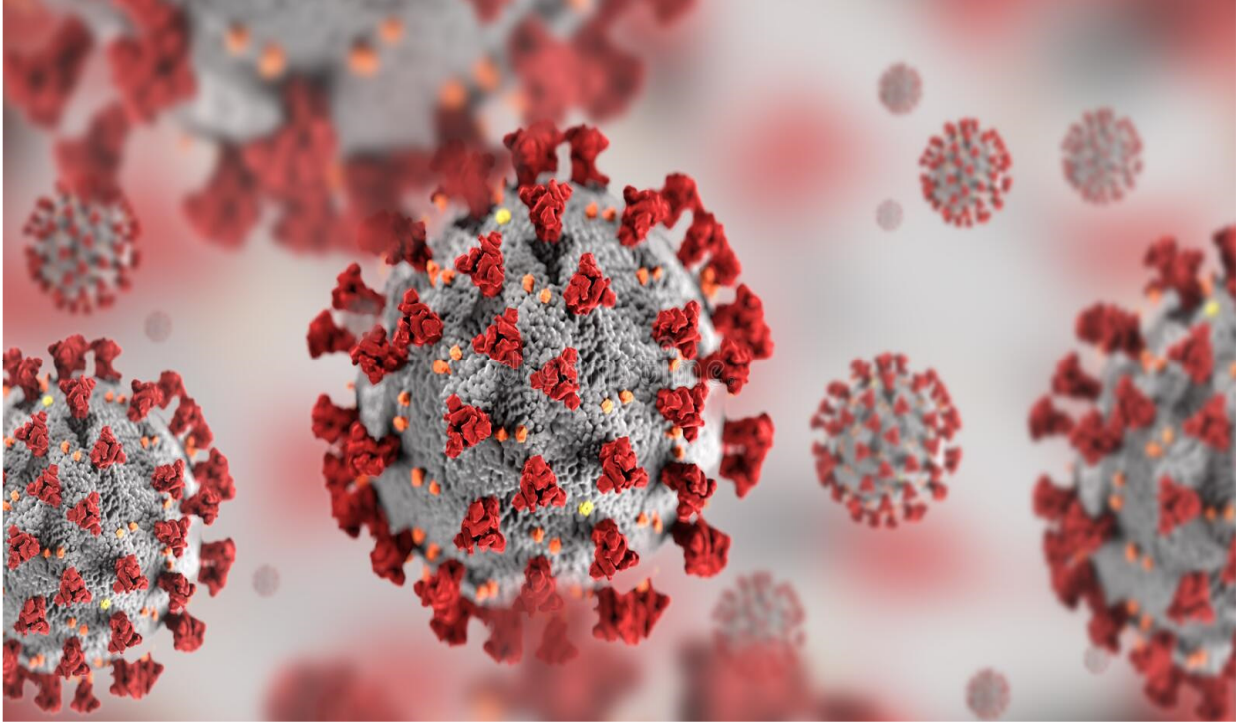
Subscribe now at:
<http://pharmamedicaltrendanalysis.com>.

Registered Office: 1/7 Byrne Street,
Bundamba, QLD 4304, Australia,
Ariban PublicationTech is registered
with Australian Securities and
Investments Commission's (ASIC),
Registration No: 1-41407417458.
ABN Number 87505212195.

COPYRIGHT

ISSN xxxx Copyright rests with the
publisher. All rights reserved. ©2022
Ariban PublicationTech. Images
courtesy of Pixabay.com

The content of these publications is for general informational purposes only. Please do not use it as a substitute for medical advice from your doctor or other qualified clinician. Ariban PublicationTech, the editor, staff or any contributors will not take any responsibility for any action taken based on the information and materials of these publications. The readers should consult with medical practitioner or specific expert for specific advice. Any views or comments published in these publications by any contributor or sourced from the articles of the journals are not the opinions or views of the editor, staff or Ariban PublicationTech. Ariban PublicationTech, therefore, disclaim all liability and responsibility arising from the use of the information from this publication by any reader, or by anyone. Published July 2022.



Covid-19 (Source: Dreamstime.com)

CONTENTS

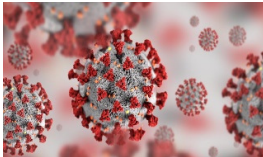
Genetic Variation of COVID-19 and Vaccine

1 Genetic Variation of COVID-19 and Vaccine Development

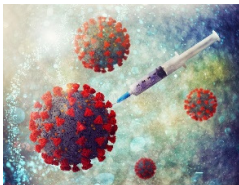
Dr Md Anwar Hossain

2. Different COVID-19 Variants and Their Mutations

3 Effectiveness of COVID-19 Vaccines on Different Variants



Different Vaccines and their effects



4 Production and distribution of vaccine around the world

5 How Natural and Hybrid Immunity Work for Protection Against SARS-CoV-2?

6 Are Homologous and Heterologous COVID-19 Boosters equally effective against Omicron?

7 Suitability of mRNA-1273 COVID-19 Vaccine for Children aged 6 to 11 years

8 Neutralization of the SARS-CoV-2 Deltacron and BA.3 Variants

Innovation of New Vaccines

9 Necessity of New COVID-19 Vaccines in the World

10 A Sustainable Recombinant Plant-Based Adjuvanted COVID-19: How Effective and Safe?

11 Intramuscular AZD7442 (Tixagevimab–Cilgavimab) for Prevention of COVID-19

12 Dual action single dose Moderna vaccine shot against the flu and COVID

13 End of the COVID-19 Pandemic

Genetic Variation of COVID-19 and Vaccine Development

Dr Hossain Md Anawar

Several variants of Coronavirus have been identified from the onset of the COVID-19 outbreak. The severity of these variants is different. Some variants have intensive and deadly effects such as Delta variant, while some variants have extensive and widespread, but less deadly effects such as Omicron. The Delta variants in the beginning of the pandemic caused more death cases. However, subsequent variant, Omicron showed less deadly effects.

Different COVID-19 Variants and Their Mutations

The SARS-CoV-2 virus has changed its gene and did some mutations generating several variants that are

circulating globally at the current time. The SARS-CoV-2 virus was first emerged in Wuhan, China in late 2019. After that, this virus is performing a lot of changes to its genes creating new variants. Some of these variants may have almost similar properties, while other variants may have severe impacts on human health. They may spread infection faster than other variants and have more dangerous and deadly effects (Geddes et al., 2021).

Effectiveness of COVID-19 Vaccines on Different Variants

COVID-19 vaccines will protect us from illness, deaths, social isolation, economic slowdown, educational

disruptions of children, and prevent severe diseases. A good number of vaccines have been developed all over the world. Some of these vaccines are less effective against some of these variants, while the others have demonstrated satisfactory performance to reduce the number of hospitalization and deaths. Furthermore, the COVID-19 booster doses are recommended for the people for added protection against infection and severe disease.

Production and Distribution of COVID-19 Vaccines Around the World

Vaccines can significantly fight against some diseases. But it is very difficult to affordably, reliably and successfully develop and bring a vaccine to the market in spite of

significant scientific advancement. Vaccine development needs a lot of financial investments, knowledge, capacity building, time and efforts. In some cases, the anticipated results may not come in spite of great efforts. After development of vaccines, sometimes, supply shortages of existing vaccines can fail to improve human health. The vaccine development in low-resource countries faces a lot of challenges.

How Do Natural and Hybrid Immunity Work for Protection Against SARS-CoV-2?

Vaccination provides people with immunity capacity. Infection with

severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) also provides natural immunity against reinfection. However, the immunity level wanes with time. Therefore, the researchers have investigated how the natural and hybrid immunity wanes with passage of time (Goldberg et al., 2022). How do natural and vaccination immunity work alone and together? How long do natural, vaccination and hybrid immunity last in human body?

Are Homologous and Heterologous COVID-19

Boosters Equally Effective Against Omicron?

Suitability of mRNA-1273 (Moderna) COVID-19 Vaccine for Children Aged 6 to 11 Years

Since the onset of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), we noticed that mostly, adult people were infected by COVID-19. Therefore, the adult people were predominantly vaccinated. However, gradually children infection started to be noticed also. Therefore, the vaccination of children to prevent coronavirus disease 2019 (COVID-19) became an urgent public health issue. Creech et al. (2022)

investigated the safety, immunogenicity, and efficacy of the

mRNA-1273 (Moderna) vaccine in children 6 to 11 years of age.

Neutralization of the SARS-CoV-2 Deltacron and BA.3 Variants

The B.1.1.529 (Omicron) variant has undergone continuing evolution generating the emergence of the BA.1, BA.2, and BA.3 sublineages

and has created serious concern over the durability of vaccine- and infection-induced immunity during the coronavirus disease 2019 (COVID-19) pandemic (Evans et al., 2022). The health concern of viral evolution through the recombination of the Omicron variant with the B.1.617.2 (Delta) variant has created serious health issues, because this new “Deltacron” variants have the ability to evade immunity induced by either vaccination or previous infection.

Necessity of New COVID-19 Vaccines in the World

There was a global shortage of COVID-19 vaccines in 2021. There will be abundant supply of vaccines by middle of 2022 to provide more equitable coverage. As of April 19,

2022, approximately 11.5 billion COVID-19 vaccine doses have been administered globally (Nohynek and Wilder-Smith, 2022). Speedy and high manufacturing capacity of the currently available vaccines by vaccine producers through the COVAX (COVID-19 Vaccines Global Access) program and beyond should secure the coverage target projected by the World Health Organization (WHO) for 70% of the world population by mid 2022.

A Sustainable Recombinant Plant-Based Adjuvanted COVID-19: How Effective and Safe?

From the beginning of out-break of COVID in 2019, severe acute

respiratory syndrome coronavirus 2 (SARS-CoV-2) has caused more than 497 million cases of coronavirus disease 2019 (COVID-19) and 6.1 million deaths globally (Hager et al., 2022). The researchers across the world have jumped into the stream of huge research and developed different types of vaccines. Most of these vaccines have the spike (S) glycoprotein as the antigen, and S-specific neutralizing antibodies have been correlated with protection against infection. The trial of these vaccines conducted in early in the pandemic generally showed high efficacy against the original Wuhan-

Hu-1 strain of SARS-CoV-2 except rare, platform-related adverse events. But there had been some mutations of original virus, that generated some new variants over time such as Delta (B.1.617.2), Omicron (B.1.1.529), and Deltacron. These variants have also some sublineages. As for example, Omicron (B.1.1.529) variant has encountered further mutation

creating the emergence of the BA.1, BA.2, and BA.3 sublineages. The health experts were anxious about the effectiveness and efficacy of the currently developed vaccines against the infection caused by these variants. Therefore, global research is continuing to improve the efficacy of the vaccines and also develop new vaccines.

can't get vaccine, are at high risk of COVID-19 infection.

Intramuscular AZD7442 (Tixagevimab–Cilgavimab) for Prevention of COVID-19

The development of different vaccines and their wide application have reduced and combated the severe attack of COVID-19 (Levin et al., 2022). But there are some immunocompromised people, who

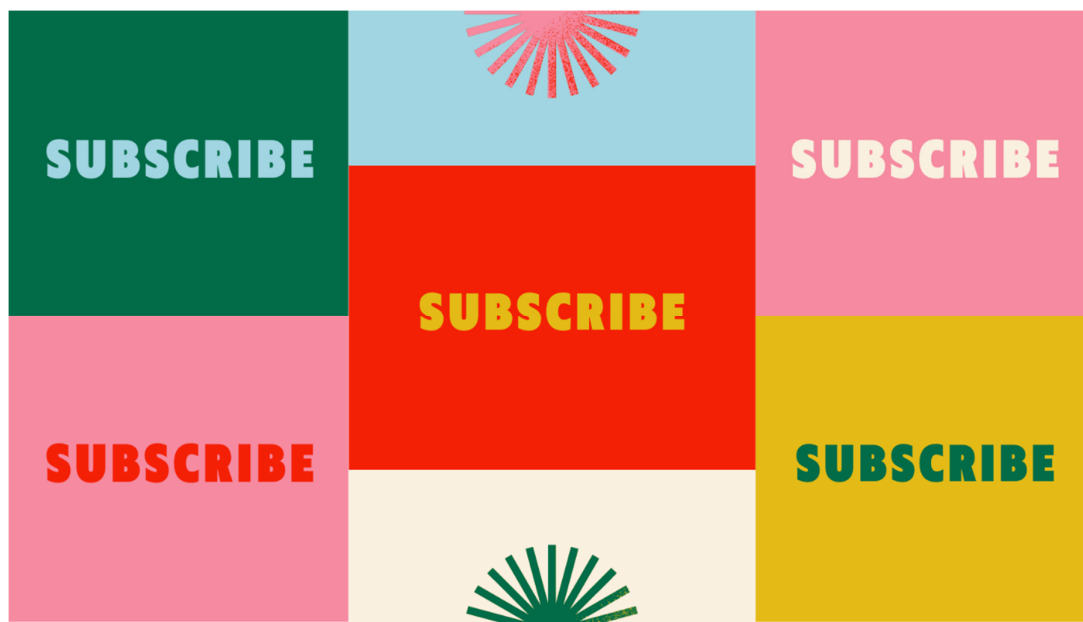
Dual action single dose Moderna vaccine shot against the flu and COVID

Moderna is endeavouring to develop a single-shot vaccine for COVID-19 and the flu in near future. This product will be made at its Victorian manufacturing facility (Koehn, 2022).

End of the COVID-19 Pandemic

The number of COVID-19 cases is decreasing all over the world and the

severity of the new variants is relatively lower than the earlier variants. Therefore, the people are wondering that the pandemic will end and change to localised problems or flu-like disease.



Benefits of Membership

PharmaMedical Trend Analysis is an online and print format publication published bi-monthly (six issue per year). Members will get the full version of each issue in both online and print format. Subscribe now at: <http://pharmamedicaltrendanalysis.com/>