

# A Hypothetical Study on Immunogenic Expression of Novel Corona Vaccines

Deepanwita Deka\*<sup>1</sup>, Avra Pratim Chowdhury\*<sup>2a</sup>, Amrit Kumar<sup>2b</sup>

1. Assistant Professor, Dept. of Botany, S.B.Deorah College, Assam, India
2. Ph.D. Research Scholar, Division-Microbiology, Dept. of Botany, Gauhati University, Assam, India.

Corresponding Authors:

1. deepanwita87@gmail.com. Cell contact: +91 9854649277
- 2a. avranu132@gmail.com. Cell contact: +91 7575905963

## **Abstract**

*Boosted therapy of immunization against SARS-CoV2 has already been certified to progress for humans all around the world. After having a long breakthrough of a pandemic, the physiological response of human cells is now presenting as omnipotent characters for their autoimmune criteria against a viral antigen, types, sub-types, strains, and modified strains. The molecular genesis is migrated and conducts with a different pattern of doses but specified in the same dosed to administer by injected protein derivatives. The viral epitopes and their surface protein are concerned with the activation of monoclonal antibodies by the artificial secondary immune response. The artificial immunogenetic is explored by analytical research of several trials of virologists from mid-August to December 2020. The ethical confirmation of molecular phenomena of antigen-antibody interaction works in the same module and different manufacturing identity against SARS-CoV2. The accuracy of antigen-antibody titer is determined on the efficacy margin of an implemented vaccine in a mass population formulating the reports and outcomes on boosted series of injections. In these circumstances, the conceptual models are required to study the SARS-CoV2 prone regions framed on the statistical alignment of the affected population during the pandemic.*

## **Introduction**

The immunization therapy depends on the immunogenetics of inserted protein derivatives for producing a secondary artificial immune response. The recommendations of the uses of the vaccines are recommended into two parts, following 100 micrograms 0.5ml for 1<sup>st</sup> dose than after 28 days [1]. This process can be alternate on molecular mimicry in plasma level to initiate the antigen-antibody interaction as implemented m RNA acted immune booster. The term "Vaccine development" is defined for SARS-Cov2 as RNA extracted immunogens at live or attenuated forms to initiate the secondary immune response in the body of the carrier host or patient following the evolutions of the three stages progressive reports [2]. The newly implemented version of surface antigen acts as a surfactant molecule to attract the protein covalent bonding for neutralization of specific recognition sites [3]. The SARS CoV 1 represented the migratory zoonosis to humans from birds underlying pneumocyte by

regenerating surfactant immunogen [10, 11, and 12]. The possibilities of artificial immunogenic molecules to act as a ligand for amino acid transference with the viral genome to trans-conduct on replicated codons [4]. The fundamentals of immunogenetics of novel corona vaccines are established on comprehensive trial with supportive effects in human cells to make the viral epitopes non-responsive [5]. Natural proteins in our body system are generally more immunogenic to evoke an immune response. Their structure is more complex to play a role for having several epitopes or antigenic determinants [6]. So immunogenesis of “Novel Corona Vaccines” is furnished with hypothetical studies by the diagrammatic models to follow up a present and upcoming scenario in a mass population [8]. As an example, the narration on immunization dosing for the unvaccinated population is recommended by Moderna (m RNA 1273) following 28 days intervals whereas Pfizer follows 21 days intervals. The present scenario of Latin America, USA, Africa, Europe, Asia, and Scandinavian countries are in a series of chronological roles to be the better from previous pandemic affection rate [7,9]. The innate immunity takes the part to migrate on protective immunity after have had the adaptation following antibodies regeneration, reforming, and immunogenetics for next interval durations.

Objective 1: Featured on Vaccine Strategy

Objective 2: Screening on Application

Objective 3: Immunogenic outcomes

## **Materials and Methods**

### **Objective 1**

The development of effective antibody-dependent artificial viral protein or epitopes is characterized as autogenously immunogenic to its patient body defense. The emerging challenges of the epidemic can be prohibited by developing monoclonal antibody defense mechanisms by the initiation of secondary lymphocytic responses. So the identification of serotypes challenges should provide from the immune system of covid affected or resistant patients. Medicinal interaction should be follow up and drug sensitivity also should be profiled before the immunogenic responses of vaccines, otherwise, a molecular ligand of protein-protein interaction may lead the autoimmune disease in the host body. For the aged populations that are suffering from pulmonary obstructive or restrictive defect, the immunization will develop in slow response due to vehicles as adjuvants or chemosynthetic protein, profiling plasma therapy, antiviral drugs, and antibiotic therapy as prescribed for treatment in pandemic time.

### **Objective 2**

The post scenario effects are synchronized in an immune level to follow up the application of immunization. The basic concept is based on immunized artificial initiation of plasma protein as antibodies by the biosynthetic process to implement. The vaccine technologies are developed on different protocols from different countries but aim in same objective and analytical studies of infectious virulent SARS CoV proteins. The methodology is developed on screening of surface antigenic virulent part, spike proteins, and potency of human immunoglobulins from infected and non-infected serum. The countries of high technology-

based took the part in monitoring, trials then finalized the immunogenetic diagram of covid vaccines by screening on volunteers.

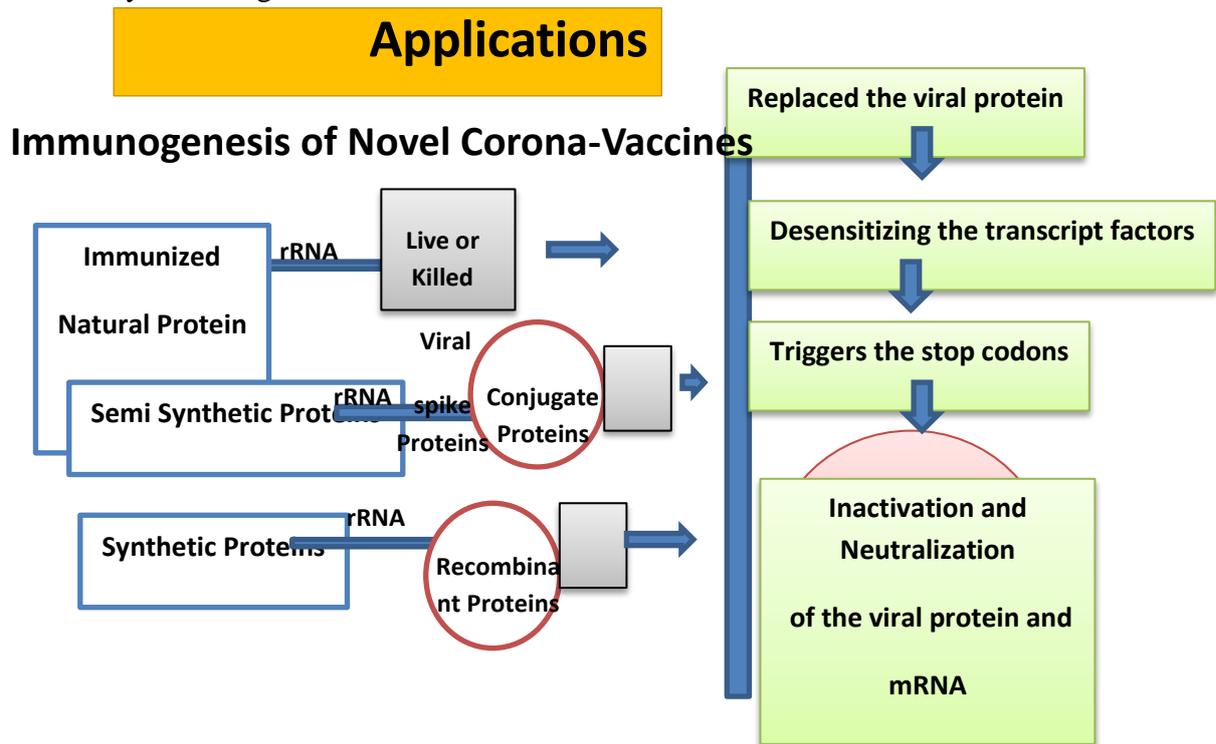


Figure 1: Immunogenesis module of the Novel Corona Vaccines following a diagrammatic model.

Objective 3

Million of the populations are hoping to receive a vaccination against the covid. Most of them are ambivalent to fear possible side effects of this immunizing procedure. The new development of the m RNA vaccine is different from the weakened or killed vaccines containing the blueprint for a component of covid 19. Mild affections are responsible to occur minor side effects as transporters introduce the surface protein of SARS-CoV2, the spike protein, and thereby trigger the immune response for mass immunization.

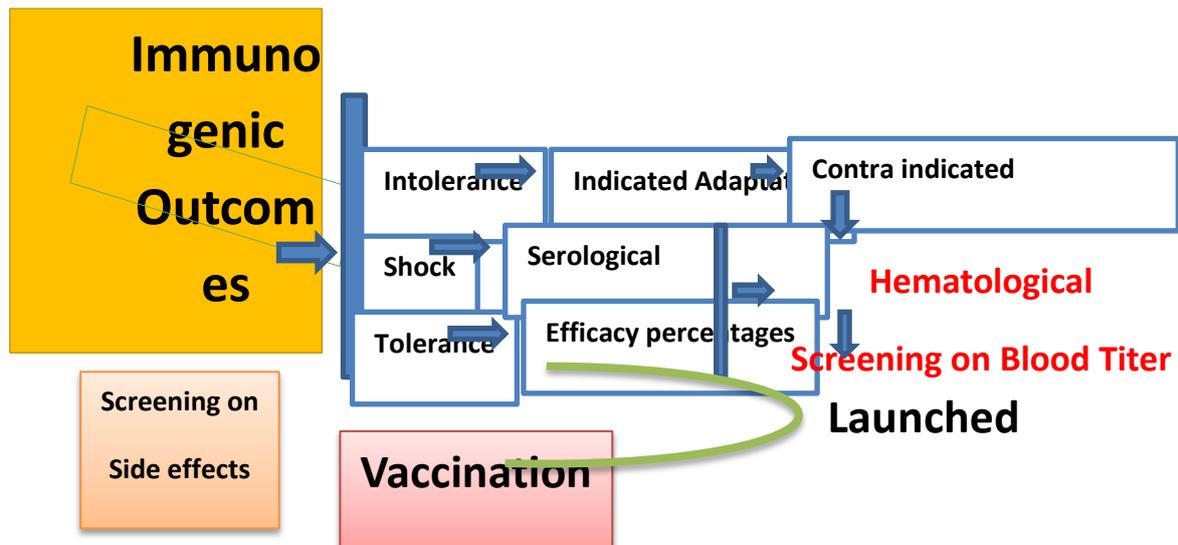


Figure 2: Analytics expression of vaccine development and its outcomes is clarified by tabular format in a pictorial view.

### Results and Discussion

Monoclonal antibodies play the primary goal to develop the autoimmune response of a natural host and hold the way for vaccine development against covid infection. The administration of an immunogenic product is variants with mutations, types, and subtypes in different molecular species. It may be thought that the immunogenetics of novel corona vaccines is possible as utilizing its pure strains of specific or non-specific on genetically engineered for human trials. The manufactured versions of different countries furnished the surface protein from spike antigen under the modern conditions of concentration and purification after their successive trials and reports. The efficacy reports come out with 95 to 99% successive roles to play out all over the world for a sound vaccination for all. The immunoglobulin molecule contains structural features that make it a powerful tool as extremely high specificity and binding affinity for the target molecule in low toxicity. Several approaches have been used to resist SARS- CoV 2 virus targeting the monoclonal antibodies as a ligand and along with a receptor of anti-epi-pleural growth factor for the cell surface antigen. The putative combination of underlining mechanisms of antibody strategy is for determining the signal of pathways to the induction of apoptosis. Another approach attempts to harness the cellular immune response with cytotoxic T cells, for utilization of synthetic proteins of the virus.

The development of novel adjuvant and advancements in the elucidation of basic mechanisms of adaptive immunity should be clarified on their cost-effectiveness before trials.

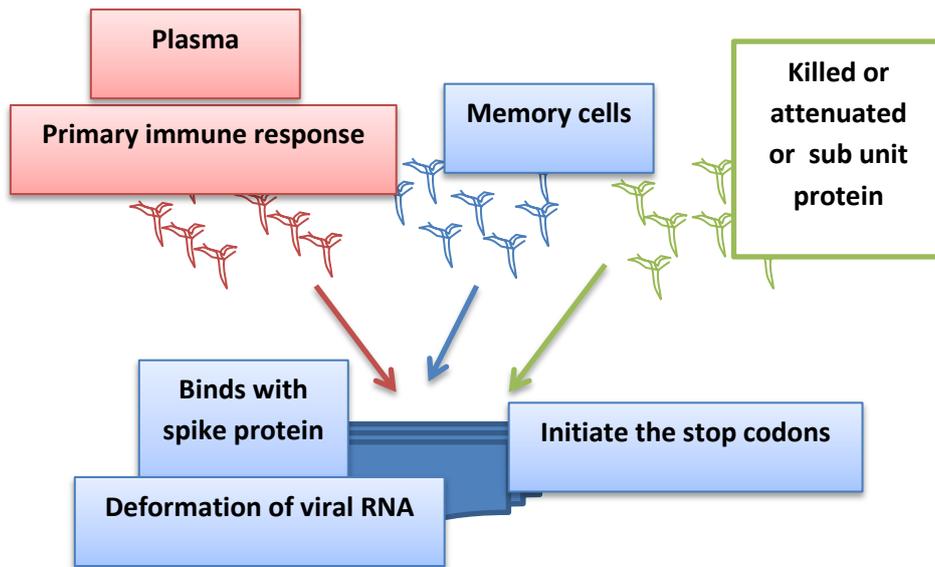


Figure 3: The activation of artificial immunogens against SARS-CoV2 virus after initiation in host immune systems.

Clinical evidence is diagrammed for the antibodies achieving the limited tumor activity as mono-therapy played a role significantly more efficacious than single agents combined with chemotherapy. The use of these protein agents as antibodies for vaccinated cancer patients will include optimized the hyper-immune, non-functional activities of primary and secondary immune responses. The combination of chemotherapy and immunotherapy regimens as well as monoclonal antibodies conjugated to cytotoxic molecules and radionuclides.

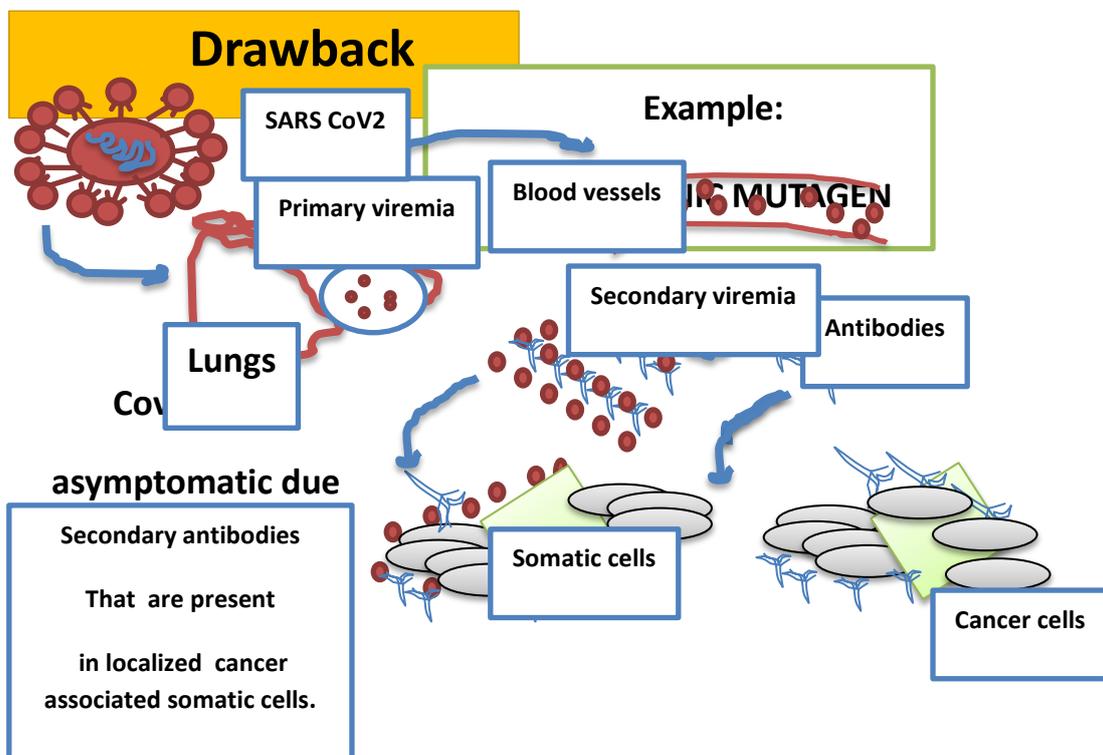


Figure 4: Low integrity of antigen-antibody interaction due to mutagenic response in cancer patients after vaccination.

But lack of effective adjuvant and basic knowledge on the immune response has hindered progress in the development of toxin-derived vaccines. The asymptomatic dysfunction of immunization may develop to the patient of HSV positive, diabetes type2, Liver cirrhosis, and auto-immune disorders. These issues must be addressed as the industry continues to grow globally. Exciting opportunities exist for the rapid development of covid vaccines in the future, with continued reduction in the cost of technologies prolonged with whole-genome sequencing, regulations changing of DNA vaccines against new strains, monitoring the introduction of novel antigen expression and delivery systems acted for virus-like particles (VLPs).

### **Conclusion**

Vaccination to prevent pandemics is monitored routinely in a limited capacity due to shortage of supply and high cost to low-income countries. The impact of COVID-19 vaccines on the pandemic will depend on several factors. These include factors such as the effectiveness of the vaccines; how quickly they are approved, manufactured, and delivered; and how many people get vaccinated. This comprises the impressive progress in novel vaccine development over the last two decades. The biotechnological efforts were decorated and well planned to prepare killed, peptide, subunit, recombinant protein, DNA and live attenuated vaccine for the world populations. The new challenge will lead the future world population to exist as the majorities of available commercial vaccines for human body defense as a protective shield.

### **Acknowledgment**

The authors acknowledge this manuscript to Dr. Moni. P. Bhuyan (Medical Microbiologist, SRL Diagnostic, Assam, India) and Dr. Arabinda Ghosh (Assistant Professor, Division-Microbiology, Dept. of Botany, Gauhati University, Assam, India) for their valuable supports, suggestions, and cordial guidance.

### **Conflict of interest**

There is no conflict of interest among the authors.

### **Funding Statement**

There is no funding assessment, sponsors, or financial aid to prepare the manuscript for publication.

### **Reference**

[1] Abbasi J. (**September 3, 2020**). "COVID-19 and mRNA Vaccines-First Large Test for a New Approach." JAMA. PubMed: <https://pubmed.gov/32880613>.

[2] Agrawal AS, Tao X, Algaissi A, *et al.* (**September 2016**). "Immunization with inactivated Middle East Respiratory Syndrome coronavirus vaccine leads to lung immunopathology on the challenge with the live virus". Hum Vaccin Immunother. 12(9):2351-6.

- [3] Anderson EJ, Roupheal NG, Widge AT, *et al.* (**December 17, 2020**). “Safety and Immunogenicity of SARS-CoV-2 mRNA-1273 Vaccine in Older Adults.” *N Engl J Med*, **383**:2427-2438.
- [4] Baum A, Fulton BO, Wloga E, *et al.* (**August 2020**). “Antibody cocktail to SARS-CoV-2 spike protein prevents rapid mutational escape seen with individual antibodies”. *Science*. 21; 369(**6506**):1014-1018.
- [5] CDC 20201231. (**January 3, 2021**). “Interim considerations: preparing for the potential management of anaphylaxis after COVID-19 vaccination. *Vaccines & Immunizations*.
- [6] Houser KV, Broadbent AJ, Gretebeck L, *et al.* (**August 17, 2017**). “Enhanced inflammation in New Zealand white rabbits when MERS-CoV reinfection occurs in the absence of neutralizing antibody”. *PLoS Pathog*.13(**8**):e1006565.
- [7] Ibarondo FJ, Fulcher JA, Goodman-Meza D, *et al.* (**September 2020**). “Rapid Decay of Anti-SARS-CoV-2 Antibodies in Persons with Mild Covid-19”. *N Engl J Med*. 10; 383(**11**):1085-1087.
- [8] Iwata-Yoshikawa N, Uda A, Suzuki T, *et al.* (**August 2014**). "Effects of Toll-like receptor stimulation on eosinophilic infiltration in lungs of BALB/c mice immunized with UV-inactivated severe acute respiratory syndrome-related coronavirus vaccine". *J Virol*. 88(**15**):8597-614.
- [9] Jamrozik E, and Selgelid MJ. (**May 2020**). “COVID-19 human challenge studies: ethical issues”. *Lancet Infect Dis*. 29: (**1473**) 3099-30104.
- [10] Ramasamy MN, Minassian AM, Ewer KJ, *et al.* (**December 2019**). “Safety and immunogenicity of ChAdOx1 nCoV-19 vaccine administered in a prime-boost regimen in young and old adults (COV002): a single-blind, randomized, controlled, phase 2/3 trial.” *Lancet*.19; 396 (**10267**):1979-1993.
- [11] Tang F, Quan Y, Xin ZT, *et al.* (**June 15, 2011**). “Lack of peripheral memory B cell responses in recovered patients with severe acute respiratory syndrome: a six-year follow-up study.” *J Immunol*. 186 (**12**):7264-8.
- [12] Walsh EE, Frenck RW Jr, Falsey AR, *et al.* (**December 2020**). “Safety and Immunogenicity of Two RNA-Based Covid-19 Vaccine Candidates.” *N Engl J Med*. 17; 383 (**25**):2439-2450.