

# Can the Following Strategy Generate a Definitive Anti-Covid Vaccine?

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## ARTICLE INFO

**Received:** 📅 February 22, 2022

**Published:** 📅 March 09, 2022

## ABSTRACT

**Citation:** Citro Gennaro. Can the Following Strategy Generate a Definitive Anti-Covid Vaccine?. Biomed J Sci & Tech Res 42(3)-2022. BJSTR. MS.ID.006753.

## Opinion

Following the spread of the different Viral Variants of COVID-19 [1-5] which seems unstoppable, perhaps a strategy could be implemented for the production of a DEFINITIVE vaccine capable of neutralizing the Virus despite the presence of variants. A few days ago I appreciated the good news that researchers published about the vaccine with the covid N protein in mice [6]. This confirms that multiple targets such as antigens allow to overcome the appearance of variants. However, vaccination experiments on animals in the laboratory, as a preclinical model, are valid but it must be careful in extrapolating them to humans. The mice used are often of the same age and genetically "IMBRED"; that is, their immune system is not genetically polymorphic, they live in very controlled conditions and are often the same age. The human immune system, on the other hand, is different in that it is subject to many parameters and is regulated by multiple polymorphisms which, as is well known, induce considerable variability as is widely demonstrated in daily practice: in timing, in dose; in effectiveness; in duration etc. Starting from these considerations, to generate a Definitive Vaccine, a valid procedure could be the following: all Healed and Asymptomatic patients, after infection with the different viral variants, have generated antibodies, contained in their blood, against all the antigenic components of the WHOLE VIRUS, including the Spike protein which represents only the most attackable antigen but not the only one [7]. That is, antibodies directed towards the protein

sequences of viral antigens which physiologically cannot be subject to mutations are present.

Moreover the pool of antibodies taken from cured and asymptomatic patients, after infection with all viral variants, can be also used as probe to identify phylogenetic common antigenic epitopes present in all coronaviruses in addition to the specific ones induced by single variants. The conserved epitopes [8,9] allow generating immunity that is not only cross-protective over coronaviruses but also relatively resistant to ongoing Covid evolution. In addition, this strategy could be applied to fight soon future pandemics by using the available first sera from healed and asymptomatic patients. Synthetic peptides (small molecules of 25 Amino acids), which sequences reflect the selected epitopes, recognized by the pool of sera from selected patients, allows the possibility of producing large quantities of vaccine at relatively low cost and easy handling in the transport and storage chain and methods of administration like nasal spray, sublingual absorption as well as intramuscular.

## Methods

Immunoaffinity Chromatography to purify synthetic peptides recognized by human antibodies. Synthetic peptides of 25 Amino Acids reflect the protein sequences of SPIKE, N and M antigens of Covid. The peptides retained in the column and then eluted after

washing can be used as vaccine in preclinical models to test anti variants-Covid efficacy.

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ISSN: 2574-1241

DOI: 10.26717/BJSTR.2022.42.006753

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