

## The Brief History of Early Invention of Covid 19's Various Vaccines which Controlled and Now Almost Ended up its Pandemic

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Covid-19 pandemic shocks and locks whole world in year 2019 and 2020. Maximum death occurred in USA followed by Italy and Spain. Here discussion and analysis have been focused on various types of vaccines of Corona virus on basis of its spike antigen S and its corresponding ACE2 receptors on certain type of human cells. The ultimate target of all types of vaccines is to prevent binding of ACE2 receptor to S antigen of corona. The main sources of the latest information of Covid 19 vaccination has been internet websites and social networking like WhatsApp and Facebook etc. Recently on 28<sup>th</sup> April, there is a video on Facebook that Oxford University, London claimed of finding out live attenuated vaccine which had been on trial basis on 800 human volunteers and they ordered Serum India company, which have the capacity of producing 1.5 billion vaccines every year, expected to be ready by September 2020. If this vaccine will found satisfactory, it would be the fastest vaccine invented ever, as usually five to six years are required in such invention, The cost wise also it will be also very cheap, it will cost about 0.5 cent per vaccine, should be consider ahead of others followed by claim of Germany and UK, the vaccine developed from chimpanzee's Corona virus is ahead of other type as now they got permission of even testing on human volunteers. Israeli defense lab claimed totally new approach of vaccine, in which rather than injecting a pathogen's antigen into human body, body has been given genetic code needed to produce that antigen itself. Israel claims this unique vaccine production requires minimum of nine months. The report of Arab news, quoting Italian news agency ANSA, claimed that company Takis isolated antibodies in mice which blocked virus from infecting human cells, which according to us should be not consider as vaccine but is the method of passive immunization and will be useful only in treatment but not for prophylaxis. Australia also claimed to develop monoclonal antibodies but by different technique but is also not vaccine candidate like Italian. Even though whole world community of scientists are working on the finding out of treatment as well as vaccine against Covid 19, till that time social distancing and lockdown only can break the chain of transmission which in turn reduces number of infected patients along with morbidity and mortality in the whole globe. Now, what I found that in India, when I wrote this paper about 1491 million doses of Covid vaccine have been given, out of which 620 million people have vaccinated 2 doses and can be considered as fully vaccinated. Covaxin and Covishield both found effective against mutated UK, South Africa/Brazil virus. But in term of efficacy, Sputnik V outshines both Covaxin and Covishield with as much as 91.6% effectiveness compared to these both types effectiveness.

Last but not least one more candidate of vaccine is knocking the door of vaccination in corona is BBV154 intra nasal vaccine which is still under trial but excellent vaccine candidate, as its immune response is at the site of infection which is nasal mucosa which is essential for blocking both infection and transmission of Covid 19. It stimulates broad immune response- neutralizing IgG, mucosal IgA and T cell responses.

The herd immunity in majority of countries, all over the world is mainly raised against Covid 19 mainly due to immunization by different types of Covid-19's vaccines as well as clinical /subclinical infections too. One should not forget the vital role of these infections.

Let's hope that at least new mutant of Covid 19 will not emerge out in future, and even any new micro-organism will also not emerge out in future. But anyway, Covid 19 had trained our human kind and especially our scientists how to defeat any such pandemic emergencies in future. Of course, it will be always controversial to decide exact role of each such vaccines and real role of clinical and subclinical infections in defending the pandemic, but we should be always thankful to our scientists who invented different types of vaccines by racing with time and release the entire world from nuisance of lockdown and masks etc timely. Last but not least just think of the scenario in which these vaccines would have not been invented, the morbidity and mortality what we had seen, would have been almost four to five times more, the globe might would have been turned in to grave yard and till moment whole world have not been relieved of Covid's deadly and highly infectious pandemic.

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