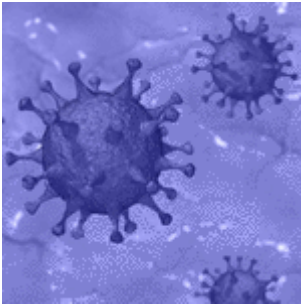


COVID-19 vaccines: can alum based adjuvants improve induction of nAbs?



Developing neutralising antibodies that target the SARS-CoV-2 Spike protein, has been highlighted as a potential strategy for an effective COVID-19 vaccine. Pre-clinical studies have demonstrated the ability to induce high levels of SARS-CoV-2 spike protein-specific neutralising Abs (nAbs) in animal models ([Gao et al., 2020](#); [Chen Pre-Print](#); [Yu et al., 2020](#)). However, adenovirus-based vaccines such as the [ChAdOx1 \(Pre-clinical study in Rhesus Macaques\)](#) and a human [adenovirus 5 vectored COVID-19 vaccine](#), induced modest levels of spike protein-specific nAbs. More importantly, nAbs induced by ad5-vectored COVID-19 vaccine were lower than antibodies detected in convalescent plasma.

How can we improve vaccine-induced nAbs titres? Commentary by Hotez et al., suggest the use of aluminium-based adjuvant formulations, such as those used for PiCoVacc ([Gao et al., 2020](#)) could promote induction high titres of nAbs." Aluminium-based adjuvants, are the "*most widely tested adjuvant component and has proven to be one of the safest, administered to millions of children and adults.*" Though the exact mechanism of how this adjuvant induces high levels of nAbs is it not fully understood, it has been suggested that the adjuvant:

- Forms subcutaneous depots which is associated with slow

release of antigens which may “*promote activation and trafficking of antigen-presenting cells to lymphoid tissues*”.

- Induces Th2 cells which play an important role in promoting humoral immune responses.

These potential characteristics could be the key to inducing robust nAbs as observed in pre-clinical SARS-CoV-2 vaccine studies.

Journal Article: Hotez et al., 2020. [COVID-19 vaccines: neutralizing antibodies and the alum advantage](#). Nature Reviews Immunology

Summary by Cheleka Mpande