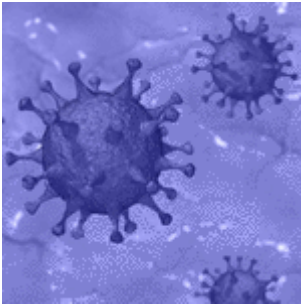


COVID-19 vaccines: can alum based adjuvants improve induction of nAbs?



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

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