Hon. David Clark, Minister of Health
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June 29, 2020

Potential new treatment for COVID-19 being researched in New Zealand

Modified soluble ACE2 to treat COVID-19.

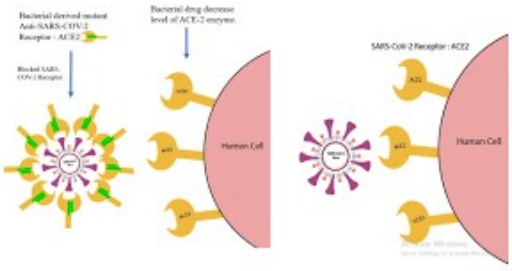
Dear Minister,

IDFNZ is a registered charity supporting patients affected by Primary Immunodeficiency, secondary immunodeficiency, and immune suppressed transplant patients. Our patient members are vulnerable to infections because of their compromised immune response and fall into the high-risk category of vulnerability to SARS-CoV-2.Naturally, IDFNZ is alert to risks the Covid-19 pandemic presents to New Zealand and is interested in the research being undertaken to combat this virus.

We would like to bring to your attention the work of a volunteer team of New Zealand clinicians and scientists, led by Associate Professor Rohan Ameratunga, who are working on this challenge in their free time, leading the way with a novel and different approach that shows real promise.

The virus 'spikes' have been shown to attack the human body by attaching to the ACE2 receptors e.g. on the respiratory surfaces of the lungs. Our local team believe the Achilles heel of SARS-CoV-2 is the RBD sequence of the spike glycoprotein, which is critical for viral entry. Their research strategy has been to produce modified recombinant soluble human ACE as a 'decoy' working to mitigate the SARS-CoV-2 infection. If the structure of these inhaled 'modified ACE2 molecules' is preserved in the process of delivering it to the lungs, the virus will bind to these decoy receptors blocking the ability of the SARS-CoV 2 binding to the human ACE2 receptors; the patient is thus protected from the virus. This novel decoy could therefore alter the trajectory of the infection, delaying or halting the destruction of the pulmonary epithelium and allowing appropriate protective immune responses to the virus

The NZ team have also developed a closed inhaler method to deliver this treatment, Respimat, (a mode of delivery which patients are familiar with), directly to the lungs to coat the ACE2 receptors on the lung surface without 'shear damage' to the decoy, or hazardous 'aerosol spray' escaping. Their results to date are really promising and have been published in the May edition of the NZ Medical Journal. https://www.nzma.org.nz/journal-articles/inhaled-modified-angiotensin-converting-enzyme-2-ace2-as-a-decoy-to-mitigate-sars-cov-2-infection.



Inhaled modified angiotensin converting enzyme 2 (ACE2) as a decoy to mitigate SARS-CoV-2 infection

Rohan Ameratunga, Klaus Lehnert, Euphemia Leung, Davide Comoletti, Russell Snell, See-Tarn Woon, William Abbott, Emily Mears, Richard Steele, Jeff McKee, Andrew Muscroft-Taylor, Shanthi Ameratunga, Natalie Medlicott, Shyamal Das, William Rolleston, Miguel E Quiñones-Mateu, Helen Petousis-Harris, Anthony Jordan

This promising research has so far been completed without external funding, the NZ team of clinicians and scientists have completed the work to date voluntarily, covering the costs themselves. A small research budget of $500k is needed to continue the work through to commercialisation. This research may well shorten the duration of the current pandemic, saving large numbers of lives and bridging the gap until a safe and effective vaccine is identified.
This group did apply for Government Covid-19 Response funding but to our disappointment were unsuccessful.

Even in the case of a SARS-CoV-2 vaccine being developed successfully (note there is no guarantee this is possible), it is likely that some vulnerable individuals, including immune deficient patients may not be suited to a vaccine, and could be still left exposed to the virus and reliant on life- long social distancing and self-isolation if this virus becomes endemic.
This alternative approach, if proven successful could provide an effective treatment which would individually shield and protect the most vulnerable from the virus.
Imagine how useful such a shielding treatment could be in the setting of rest homes for the elderly, hospitals, and other high-risk patients. It is disappointing that MOH has shown no interest in this research and has declined funding assistance.

We urge the Ministry of Health and Ministry of Business, Innovation and Employment (MBIE) to reconsider urgent support of this research.

Nick Metson
Chairman IDFNZ