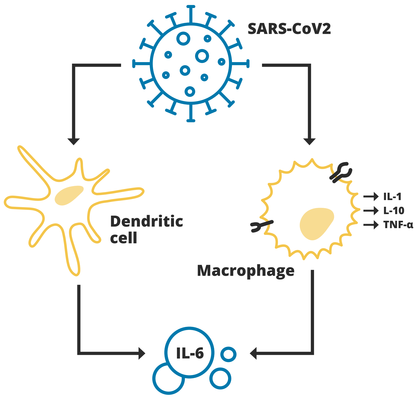
A potential role for Galectin-3 inhibitors in the treatment of COVID-19

BACKGROUND

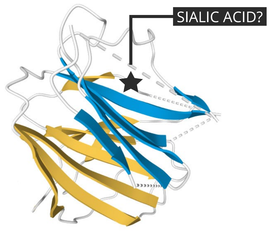
The outbreak of SARS-CoV2 has been declared a global pandemic by the WHO. With no standard of care for the treatment of COVID-19, there is an **urgent need to identify therapies that may be effective in treatment**. Here we provide a systematic review of the available literature and an **impetus for further research on the use of Gal-3 inhibitors in the treatment of COVID-19.**

CYTOKINE RELEASE SYNDROME

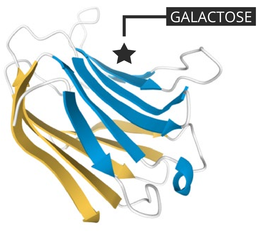
Recent evidence has implicated the development of **cytokine release syndrome (CRS) as the major cause of fatality in COVID-19 patients**, with elevated levels of IL-6 and TNF-α observed in patients. **Inhibitors of the small molecule Gal-3 have been shown to reduce the levels of IL-6, IL-1β, and TNF-α.**



Additionally, a key domain in the spike protein of β-coronaviridae, a genus which includes SARS-CoV2, is **nearly identical in morphology to human Gal-3**. These spike proteins are critical for the virus' entry into host cells.



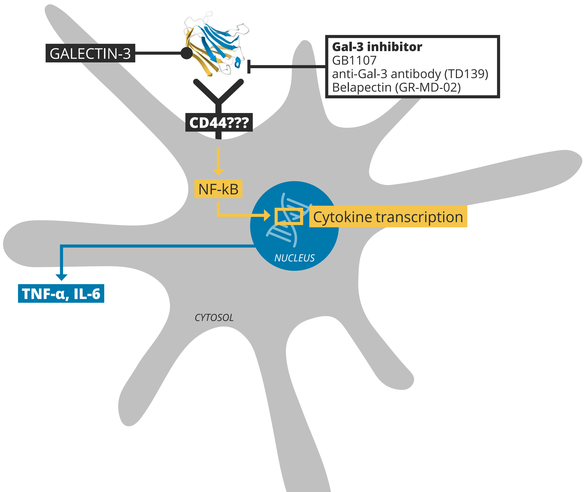
SARS-CoV2 S1-NTD



Human Gal-3

DUAL MECHANISM

We propose a **dual mechanism by which Gal-3 inhibition may be beneficial in the treatment of COVID-19, both suppressing the host inflammatory response and impeding viral attachment to host cells.**



Further research into the role of extracellular sialic acids in SARS-CoV2 attachment is necessary to fully understand the role of Gal-3 inhibition in antiviral therapy.

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