Review of: "Regulation of the acetylcholine/α7nAChR anti-inflammatory pathway in COVID-19 patients"

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This paper, interestingly, reminds us of the complex role that the alpha 7 neuronal nicotinic receptor gene (*CHRNA7*) plays in anti-inflammatory pathways. In humans, the *CHRNA7* gene is partially duplicated and has formed a new and functional gene, *CHRFAM7A*. The *CHRFAM7A* gene product assembles with alpha 7 subunits and acts as a dominant negative regulator. Dr. Sellam and colleagues show that in subjects infected with COVID-19, mRNA for *CHRFAM7A* is down regulated in whole blood samples. Their results are important and suggest that this down regulation likely results in increased function of alpha 7 receptors that contributes to the anti-inflammatory response. The *CHRFAM7A* gene differs in copy number; some individuals have only one copy and a few have no copies. Further, there is a 2bp deletion in *CHRFAM7A* in about 40% of Caucasians, resulting in a truncated gene product. Future studies might be even more significant if the number of functional copies of the duplicated gene are evaluated. Additionally, it would be of interest to use macrophages rather than whole blood. Still, the positive results suggest that further study of the relationship of *CHRNA7* and *CHRFAM7A* in inflammatory processes involving COVID-19 is warranted.

The Human *CHRNA7* and *CHRFAM7A* genes: A review of the genetics, regulation, and function. M.L. Sinkus, S. Graw, R. Freedman, R.G. Ross, H.A. Lester, and S. Leonard. Neuropharmacology 96:274-288, 2015.