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

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Potential competing interests: The author(s) declared that no potential competing interests exist.

In this manuscript, the authors found that COVID-19-induced hypercytokinemia is associated with decreased expression of CHRFAM7A, and COVID-19 patients without CHRFAM7A expression also showed increased TNF pathway expression. The study is interesting, but there are several issues need to be addressed.

1. The study design is unclear. This should be a prospective cohort study. However, it lacks primary endpoint and secondary endpoints. Accordingly, sample size has not been calculated.
2. The hypothesis is not well described. Why is the dominant negative duplicate CHRFAM7A selected as a study target? What is the relationship between the native CHRNA7 and the dominant negative duplicate CHRFAM7A? Brief description should be given in the Introduction.
3. In the Abstract, the time window of blood draw for patients was described as 9-11 days after symptoms onset, while it was 8-12 days in the method part. Details like that should be consistent.

4.Therapeutic strategies like nicotine to manipulate the cholinergic system in COVID-19 seems thought provoking. However, considering that nicotine has side-effects as well, it is necessary to explore how to balance the promising therapeutic benefits and side effects of nicotine in COVID-19 patients. Issues regarding this should be discussed in the Discussion.