Review of: "The α7 Nicotinic Acetylcholine Receptor: a Key Molecule in Post-COVID Syndrome?"

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Potential competing interests: No potential competing interests to declare.

Referee report concerning the manuscript:

The α7 Nicotinic Acetylcholine Receptor: a Key Molecule in

Post-COVID Syndrome?

by Marina Skok

The author reviewed role of α7 Nicotinic Acetylcholine Receptor in long-term Covid Syndrome.

The basic idea is that SARS-Cov-2 spike protein induces strong immunological response by mimicking α7 ligands. Particularly important is fragment 674-685. Since α7 nAChRs is expressed in several organs and tissues this is an explanation why long-term Covid effects so many organs. The author suggested a strategy to neutralize this interaction by applying α7-selective agonists which stimulate α7 nAChR signaling. The manuscript is a nice review that is publishable after a minor revision. There are few points the author should address.

1) page 1, line 1

SARS-CoV-2 killed nearly seven million people.

2) page 2, paragraph 2, lines 1,2,3

A scheme would help a lot.

3) page 2, paragraph 3

I would add discussion and references concerning role of monoaminergic system in SARS-CoV-2 infections. The basic idea is that levels of phenylethylamine (PEA) are substantially elevated since spike protein inhibits monoamine oxidase. PEA is endogenous amphetamine and its elevated levels can cause Parkinsonism.

See for example:

Front. Mol. NeuroSci. 11 (2018) article 467, doi: 10.3389/fnmol.2018.00467

Neurotox. Res. 37 (2020) 724–731.

Comput. Struct. Biotech. J., 20 (2022) 1254–1263

Moreover PEA interacts beside DAT also with the trace amine-associated receptor and is psychedelic.

Quote, comment!

4) page 3, last paragraph

I would extend discussion concerning smoking and long term Covid. Would it help if nicotine would be administered to Covid patients to avoid long-term Covid?

Comment!

--End of comments--