Review of: "Evolution of new variants of SARS-CoV-2during the pandemic: mutation-limited or selection-limited?"

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Potential competing interests: No competing interests exist concerning this article. (The affiliation of Akane Hara, Laboratory of Pharmaceutical Quality Assurance and Assessment (University of Toyama) is an endowed laboratory supported by an unrestricted grant from Nichi-Iko Pharmaceutical Co., Ltd. (Toyama, Japan).)

Review comments on the revised version(v2), September 27th, 2023

I confirmed that the conditions of calculation has been explained in the current version in response to my comment 2. An explanation of purpose of the simulations has also been added at the beginning of the first paragraph of "Simulations".

However, some points related to my previous comments are still unclear. I would like to ask some additional questions and give comments as follows:

1. (related to the previous comment 1)

What kind of the features of infection were aimed to find by the simulation(Fig.3a and 3b) which was not predicted at the stage of building theoretical frameworks in Fig.2?

According to the revised version, I understand the aim of simulations was to check the dynamics assuming different hypotheses: the mutation-limited model (Fig.3a) and the selection limited model (Fig.3b). After the simulation, the authors compared the patterns of the prediction(Fig.2) and the real data(Fig.4) in the paragraph "To test the predictions...". However, the comparison can be done without the simulation results, since the authors did not refer to Figure 3 in that paragraph. There should be some reasons to perform the simulations because describing Figure 2 was not sufficient for the comparison to the data. Including these points, the interpretation of the simulation results (Figure 3A) and how to use the simulation results for hypotheses testing need to be discussed in more detail.

2. (related to the previous comment 2) The authors added the explanation of parameter range ("Range of parameters used for the simulations were _K1 =0.01 to 0.2; K1 =.01 to 0.1; K3 = 0.0001 to 0.1; p = 0.001 to 0.00001._") in response to my comment. Were the parameters chosen stochastically for each variant? If so, it should be clearly written in the section "Simulations".

3. The two URLs still do not work and need to be modified.