Review of: "Analysis of the Spread of Covid-19 via Atangana-Baleanu Fractional Derivatives"

OPhir Nave[1]

1 Jerusalem College of Technology

Potential competing interests: No potential competing interests to declare.

The paper is very interesting from a practical point of view, especially the stability part of this research. Please revise the paper based on the following major comments:

- Please provide the methods used in this research in the abstract section. It is important to present in this section.
  - Add a nomenclature to the paper, as well as units for every mathematical and physical parameter and variable.
- Preliminaries should be after the mathematical model presentation. In the research article, the mathematical and biological assumptions are present first, and after that, the mathematical model is presented.
- The authors used the norm operator. Please be more specific and let us know which norm you used.
- The stability analysis section is not clear. Please explain in detail how you got the Jac. Matrix and how you computed the eigenvalues of this matrix?
- It is not clear how the authors obtained the results presented in Section 5. How did you get the mathematical expressions?
- The following papers can be added to the current research:

Nave, Op., Shemesh, U., & HarTuv, I. (2021). Applying the Laplace Adomian decomposition method (LADM) for solving a model of Covid-19. In Computer Methods in Biomechanics and Biomedical Engineering (Vol. 24, Issue 14, pp. 1618–1628). Informa UK Limited. https://doi.org/10.1080/10255842.2021.1904399

Butt, A. I. K., Ahmad, W., Rafiq, M., Ahmad, N., & Imran, M. (2023). Optimally analyzed fractional Coronavirus model with Atangana–Baleanu derivative. In Results in Physics (Vol. 53, p. 106929). Elsevier BV. https://doi.org/10.1016/j.rinp.2023.106929

Nave, Op., Hartuv, I., & Shemesh, U. (2020). Θ-SEIHRD mathematical model of Covid19-stability analysis using fast-slow decomposition. In PeerJ (Vol. 8, p. e10019). PeerJ. https://doi.org/10.7717/peerj.10019

- Please add a very important section called discussion. In this section, the authors need to discuss the results and the connections between the results and the theoretical section.
- The paper needs to be edited by an English editor.