

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

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Potential competing interests: No potential competing interests to declare.

The article with the title "**Analysis of the Spread of Covid-19 via Atangana-Baleanu Fractional Derivatives**" written by **Mohamed Abdelaziz Zaitri and Naas Adjimi**, is about the Covid-19 pandemic solved by Atangana-Baleanu fractional derivatives.

The paper has quality, but after reading the article thoroughly, I have some queries in my mind regarding the article, and even I have some suggestions to uplift the quality of presentation of the article. I suggest **minor revisions** for this article. My queries and suggestions are:

1. At first, in the title, it should be "Derivative" instead of "Derivatives."
2. I am not happy with the abstract. It must be rewritten in terms of key results and from a language point of view.
3. Correct the indent throughout the paper.
4. Coming to the introduction, it is not described as it should be. Introductions and prerequisites are the base of any paper; they cannot be briefly described. Extend the introduction part by including some recent studies (suggested at point 17, below). Also, include the applications showing the importance of fractional calculus and their outcomes in the introduction section.
5. The structure of the paper is widely described in the paper; reduce it, include only a brief discussion.
6. On page 4, the total constant population  $N$  is given by?? What do you mean by "is given by"? Correct it.
7. On page 9, the kernels are not presented properly; do it correctly.
8. In section (5.1), you have not cited the paper from where you have taken the values of all the parameters. Cite the paper.
9. There are countless language, typo, and grammatical mistakes in the paper. Please remove them all and read the paper thoroughly.
10. What is the novelty of the article? This is missing; include it in the paper.
11. Please see the following articles and include them in your paper to improve the introduction part of the article:
  - Khalouta transform and applications to Caputo-fractional differential equations. *Frontiers in Applied Mathematics and Statistics*, 10, 1351526.
  - Computational analysis of multi-layered Navier–Stokes system by Atangana–Baleanu derivative. *Applied Mathematics in Science and Engineering*, 32(1), 2290723.
  - Nonlinear complex dynamical analysis and solitary waves for the  $(3+1)$ -D nonlinear extended Quantum Zakharov-

Kuznetsov equation. *Results in Physics*, 107432.

- Mathematical analysis of Streptococcus suis infection in pig-human population by Riemann-Liouville fractional operator. *Progr Fract Diff Appl*, 10, 119-35.
- Analysis of the multi-dimensional Navier–Stokes equation by Caputo fractional operator. *Fractal and Fractional*, 6(12), 743.
- Effect of Covid-19 in India-A prediction through mathematical modeling using Atangana Baleanu fractional derivative. *Journal of Interdisciplinary Mathematics*, 25(8), 2431-2444.
- Mathematical modelling of growth of tumour cells with chemotherapeutic cells by using Yang–Abdel–Cattani fractional derivative operator. *Journal of Taibah University for Science*, 16(1), 1133-1141.
- Solution of modified bergman minimal blood glucose-insulin model using Caputo-Fabrizio fractional derivative.

I hope the above suggestions will be helpful for improving the quality of the paper.

Best of luck!!

Thank you