

## The Multiple Difficulties of Comparing Results in the Fight against Coronavirus

Cristóbal Lárez Velásquez

*Departamento de Química, Facultad de Ciencias, Universidad de Los Andes, Mérida 5101, Venezuela*

**\*Correspondence to:** Dr. Cristóbal Lárez Velásquez, Departamento de Química, Facultad de Ciencias, Universidad de Los Andes, Mérida 5101, Venezuela.

### Copyright

© 2022 Dr. Cristóbal Lárez Velásquez. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Received: 19 June 2022

Published: 09 August 2022

**Keywords:** *SARS-CoV-2; Chitosan; Chaotic Management; WHO*

Only in a time of profound crisis can be quantified the true magnitude of the cohesion that a given society possesses, be it a commune, province, nation, etc., to defend its distinctive values, including those related to its own subsistence. Conclusive evidence on this point has been provided by the current crisis related to COVID-19, in which some mutations of viruses whose existence is at least 10,000 years [1] have exposed the unthinkable disconnect of significant percentages of their populations with fundamental leaders or authorities of some countries with a solid democratic appearance.

Similarly, the COVID-19 pandemic has also made it possible to become aware of the incredibly scarce information that humanity in general has about the mechanisms of action of these microorganisms, despite the longtime of knowing their ancestors and their pernicious effects on humans. It should be hoped that, for problems of this nature, humanity would have better coordinated and correctly directed action mechanisms by the experts who have held leadership positions in the organizations in charge of these issues, although they have never been proved in battles of the current magnitude. Unfortunately, the results clearly show that they were vastly outperformed. In this sense, is highly worrying the little or no information on the subject shared by the World Health Organization (WHO), a supranational institution that is supposed to guarantee the application of security protocols to protect the entire population of the planet and whose performance has been questioned by experts, even proposing drastic changes to their actions in the face of future events of a similar nature [2]. Additionally, the economic dependence of the WHO on some powerful governments

showed many weaknesses in achieving equal care for all the peoples of the planet. However, despite such bad news, it is also important to recognize that many actions of solidarity between countries have been achieved, when some governments have provided free aid to other countries with significant supplies of vaccines, such as donations from China to Ecuador, Dominican Republic, Mexico, Venezuela, etc., donations of vaccines from the United States and Spain to Guatemala, to cite a few examples. Likewise, the mystique of many medical doctors and health staff in various parts of the planet, who have offered their lives in the fight against this new scourge, should be highlighted.

The brief summary above allows us to affirm that the current pandemic has revealed a chaotic situation in various areas related to its management, especially in relation to the executive part of both national and supranational public policies. On the one hand, it is undeniable that the obstinacy of some authorities to impose their political and messianic vision of the matter, even against the recommendations of the experts they themselves have appointed as their health advisers [3,4], leading their countries towards deep health crises, with higher death tolls than the most pessimistic initial estimates. This situation has led to global chaos, having witnessed the embarrassing abuse of economic power by some governments, at critical moments, to obtain equipment and supplies that would allow them to overcome their difficult political time. On the other hand, it also seems that many experts in charge of epidemiological management in their institutions have not been able, for reasons of ego, to agree to attack the problem through a common protocol, which, together with the zeal of the vaccine manufacturing companies to control the sector, increased the chaos that has been experienced at certain times. However, there are compelling examples of joint research carried out by large groups of researchers, from different research centers in different countries, pointing in the same direction [5].

In addition, it is important to understand that although the administrative difficulties play a predominant role in the inadequate management of the situation, both nationally and globally, it is also necessary to analyze the complexities of the scientific research related to the subject. In the first place, it must be established that the fight against SARS-CoV-2 and its different mutations has at least 4 fronts on which research has been carried out: preparation and testing of vaccine systems, testing of new and already known antivirals, cytokine storm control, and passive antibody therapy. Each of these fronts can be approached through different methodologies, including experimental studies where several of these strategies are studied simultaneously, a situation that can become much more complex if experimental trials are carried out without establishing a minimum coordination that allows comparisons of the results obtained, including those of other researchers.

An excellent example of how complex this situation can become is found in the research on the applications of the chitosan biopolymer in the fight against COVID-19 [6], although it is not a problem that occurs only in the studies of this material related to this topic. Chitosan and some of its derivatives have been especially relevant due to their antiviral activity and during the investigation of the different related mechanisms that are currently considered. However, it could be difficult to establish comparisons between results carried out by different working groups because, in principle, chitosan can be obtained from different natural sources (crustacean shells, fungal cell walls, fish scales, etc.), which may be affected by different factors (species, stage of the species), by different preparation methods (thermal or ultrasonic alkaline deacetylation, enzymatic deacetylation, etc.), using different purification processes (precipitation, ultrafiltration, etc.) and derivatization etc. Among the most promising derivatives stand up those of polycationic nature, which are

usually obtained by substituting amino and hydroxyl groups for residues that contain quaternary ammonium groups in different proportions and/or order within the polymer chains; these may be generically referred to as N-[(2-hydroxy-3-trimethylammonio)-propyl]-chitosans. The most important characteristic of these materials is that their antiviral activity against different types of coronaviruses can be optimized by varying the physicochemical properties of the starting chitosan (degree of acetylation, molecular weight, distribution of monomeric units along the chain, etc.) and/or the substitution percentages of the derivative finally obtained [7], which in turn depends on the derivatization method followed. Thus, it is necessary to generate a consensus among researchers related to the subject to establish some specific characteristics of chitosans, and their most promising derivatives, which should be used as a control in research related to the subject, thus ensuring that in future studies there are reliable points of comparison.

Likewise, it is necessary to establish global common work protocols for research related to other materials used in the fight against SARS-CoV-2, although this seems much more difficult to implement. A small inducement to do so is that it could define the continuity of the humankind.

## Bibliography

1. Wertheim, J. O., Chu, D. K., Peiris, J. S., Kosakovsky Pond, S. L. & Poon, L. L. (2013). A case for the ancient origin of coronaviruses. *Journal of Virology*, 87(12), 7039-7045.
2. ONU. Noticias ONU (2021). Nadie estaba preparado para reaccionar rápido al COVID-19, todos los países fallaron.
3. France 24 (2021). Bolsonaro descarta confinamiento nacional recomendado por especialistas.
4. McNeil, D. G. (2021). Inacción, malas decisiones y negación: el legado de Trump en la gestión de la emergencia sanitaria. *The New York Times*.
5. Yu, J., Tostanoski, L. H., Peter, L., Mercado, N. B., Mc-Mahan K., Mahrokhian, H. H., *et al.* (2020). DNA vaccine protection against SARS-CoV-2 in Rhesus macaques. *Science*, 369(6505), 806-811.
6. Lárez-Velásquez, C., Rojas-Pirela, M (2020). Los quitosanos y la lucha contra los coronavirus. *Avances en Química*, 15(1), 23-34.
7. Milewska, A., Chi, A., Szczepanski, A., Barreto-Duran, E., Dabrowska, A., Botwina, P., *et al.* (2021). HTCC as a highly effective polymeric inhibitor of SARS-CoV-2 and MERS-CoV. *Journal of Virology*, 95(4), e01622-20.