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Love in the Times of Coronavirus

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1. Editorial

It is well known that good times are filled with friends and in bad times we find out who is who.

As in Garcia Marques's novel, we have never been so far from love as in these times.

I have the feeling that the experience of globalization and the easy access to information, has made us more disconnected and uninformed than ever before.

Anyone thinks that they have the moral and scientific authority to talk about anything, and above all, to serve their own interests.

As a scientist, I'm not even going to try to talk about love, because certainly no one has yet managed to come close to a certain definition. But I will talk about Coronavirus and the global and personal implications.

The first case of new coronavirus-infected pneumonia (SARS-CoV-2) (NCIP) occurred in Wuhan, Hubei province, China, in December 2019. NCIP is the seventh coronavirus.

Coronaviruses belong to the Orthocoronavirinae subfamily in the family Coronaviridae, in the order Nidovirales. They are involved virus with a positive, single-stranded RNA genome and a helical symmetry nucleocapsid.

To date, six CoVs have been identified to infect humans: HCoV-229E, HCoVOC43, HCoV-NL63, HCoV-HKU1, severe acute coronavirus respiratory syndrome (SARS-CoV) and Middle Eastern coronavirus respiratory syndrome (MERS-CoV).

Following the line of my investigation, I would like to make some contributions that I think are absolutely necessary in these moments of panic and disorientation.

Broad-spectrum germicidal activity is one of the main properties of ozone therapy and O3 metabolites.

O3 is considered the largest germicide in nature because it has a direct oxidizing action on microorganisms, and one of its first uses was as an antiseptic and bactericidal agent.

In vitro antiviral activity includes damage to the capsid, oxidation of the lipid envelope, and changes in structure that prevents binding to the receptor and penetration into a new cell. All of this is achieved at concentrations lower than those used in the treatment of bacterial infections, since the virus has less structural complexity on the outer walls.

In vivo, the viricidal capacity of O3 is obtained by stimulating the immune system and not by directly attacking the effector virus.

The activity of O3 on immunocompetent cells has been intensively investigated by Bocci et al. The results of these investigations made it possible to understand how O3 acts in the human organism, and to demonstrate that after different incubation times, ozo-

nated blood releases interferons (INF-a, INF-b, and INF-g); Tumor necrosis factor alpha (TNF-a); Transforming growth factor beta (FGT-b); Granulocyte-monocyte stimulating factor (GM-FEC), and Interleukins (IL-6,2,4,8,10 and 1a).

The action of O3 on the immune cell is comparable to the action of a mitogen. Macrophage-activated CD4 T lymphocytes produce cytokines (IL-2 activates and differentiates T cells. The activation of NK T cells induces cytotoxicity of LT CD8 favoring the activation and proliferation of LB.

This whole cascade of immune reactions constitutes the immune mechanisms used in the destruction of cells infected by viruses, parasites, as well as neoplastic cells and bacteria circulating in the blood stream.

It has been scientifically proven by Shultz et al. that the intraperitoneal administration of Ozone produces an intense stimulation of humoral and cellular immunity, achieving tumor remissions in a large part of the animal population treated with this method. In our line of investigation, in addition to confirming the findings of Dr. Shultz, we were able to demonstrate that even in individuals genetically modified for the expression of spontaneous tumors, the immune system can revert tumor lesions to lighter stages (from hyperplasia to dysplasia), the which demonstrates that ozone therapy.

In addition to being an excellent complementary therapy for the treatment of oncological diseases, would be very interesting used as prophylaxis for patients undergoing chemotherapy or immunosuppression due to onco-hematological treatments, faced with the threat of an outbreak of any infection (viral, bacterial or parasitic).

To end with my Editorial, I would like to highlight the high level of safety that Ozone-therapy has, in terms of the populations to be treated (children, elderly, pregnant women, etc.), reflected in innumerable research works carried out by Dr. Silvia Menedez-Cepero, who, in her article "Importance of the Toxicological Tests in the Application and Safety of Ozone Therapy", reveals the high level of safety and the absence of toxicity even in the administration of high doses of Ozone in the studied organisms.

What makes me conclude that the use of Ozone-therapy in the days of Coronavirus, could even be considered an appropriate act of Love.