**Innate immunity potentiation with a nasal interferon formulation and with a new mucosal vaccine**

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**Abstract:**

With the first case of COVID-19 on April 11, Cuba began an extensive research program to control the epidemic. As everywhere else, the quickest route was to select among the products already available from other indications or in clinical development those that due to their mechanism of action, proven safety, or clinical evidence could affect the new coronavirus. Nebulized Interferon was one of the first drugs that showed an effect in the protection of medical personnel in clinical studies against COVID-19 in Wuhan. The concept of training immunity with vaccines originally developed for other diseases have gained attraction during the epidemic and several clinical trials and epidemiological analysis of populations previously immunized with BCG vaccine are the focus of scientific discussions and expectation.

Here we show the activation of innate immunity markers both at mucosal and systemic level with a Nasalferon, a new nasal formulation of Interferon alfa 2b as well as with a mucosal vaccine HeberNasvac containing virus like particle and nucleocapsid particle of the hepatitis b virus. In a proof of concept clinical evaluation in human volunteers, both Nasalferon administered as nasal drops and HeberNasvac administered as a nasal spray and sublingual drops, activate interferon-induced genes and Toll Like Receptors 3, 7, and 8 at the level of oropharyngeal mucosa and peripheral blood. Likewise, in peripheral blood are activated monocyte and lymphocyte populations expressing HLA-DR. Nasalferon also induce expansion of B19 cells and increase CD4 + / CD8 + T cell ratio.

**Biography of presenting author**

Prof. Gerardo Guillen. Ph.D. is the Director of Research at the Center for Genetic Engineering and Biotechnology in Havana. Member of the Cuban Academy of Science. Full professor of Havana University and Latin-American School of Medicine. Distinguished Professor, UESTC, China. He has 215 papers and 56 patents on vaccinology, biotechnology, infectious diseases, and pharmaceuticals. Have been honored with 52 awards of the Cuban Academy of Science, with the TWAS award on Biology, the “C.J. Finlay Medal” of the Cuban State Council, awarded for upstanding results on science, the Annual Award of the Cuban Chemistry Society, and the patent award of the WIPO.

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