

## **Cuba's Interferon Alfa 2B Recombinant (IFNrec)**

Cuba's Interferon Alfa 2B Recombinant (IFNrec) – marketed as Heberon® Alfa R. - has gained an increasing international profile with articles published in Newsweek, Le Monde Diplomatique, International Business Times, and important scientific journals like Lancet and the World Journal of Pediatrics.<sup>1</sup> With IFNrec continuing to make headlines, at least 45 countries have sought to use IFNrec in the fight against the COVID-19 pandemic but not the United States and Canada. Interferon amplifies the immune response and has been used to treat a variety of cancers (e.g., leukemia, melanoma, AIDS-related Kaposi's sarcoma) and viral infections (e.g., chronic hepatitis B, chronic hepatitis C, condylomata acuminata). Interferon derives its antiviral properties from the general antiviral properties of the interferon molecule, which are specific proteins released by cells as part of the body's natural response to the presence of viruses.

Cuba's IFNrec is one of several versions of interferon that are artificially produced. Interferon Alfa-2B is produced from the protein Interferon Alpha-2 and was originally sequenced and produced in 1980 by Charles Weissmann at the University of Zurich. Cuba began producing Interferon Alfa-2B in 1981. Its unique production techniques distinguish it from other artificially produced interferons (including versions of Interferon Alfa 2B produced in the United States). The Cuban process has made the production of Interferon Alfa 2B more efficient and also improved its quality, achieving a 99% purity in extracting the interferon molecule. It is now produced in significant quantities through a Cuba-China joint venture.

The Cuban product - IFNrec - has been used against various viral infections for which there are no specific therapies available. It has been demonstrated to activate the patient's immune system and to inhibit viral replication. In Cuba, IFNrec has been used to combat outbreaks of dengue hemorrhagic fever and conjunctivitis, as well as treat Hepatitis B and C. It has, also, demonstrated effectiveness in combatting and providing protection against infections caused by various versions of the coronavirus, such as, SARS-CoV (the coronavirus of the 2002 outbreak) and SARS and MERS-CoV (the coronavirus of the 2012 outbreak).

While IFNrec is not a panacea, preliminary reports are promising, pointing to its efficacy (combined with other drugs) in treating COVID-19. In Cuba and its medical missions in more than 20-countries, IFNrec is a crucial part of the treatment protocols and is also used as a preventative measure to protect healthcare workers from contagion. China and Spain have incorporated IFNrec into their national protocols and clinical guidelines for COVID-19 treatment, where it is a crucial component of the antiviral treatment to combat the coronavirus. In China, IFNrec, together with Lopinavi/Ritonavir, is part of a nebulized treatment recommended for patients with COVID-19 pneumonia. Nebulized Interferon Alfa 2B is also recommended as a treatment for children and pregnant women with COVID-19. Although, IFNrec is not the only drug used to confront the COVID-19 pandemic in China, it is one of the most used drugs for the treatment of COVID-19, especially in its aerosol form. Thus, while IFNrec is not a cure or a vaccine, it has shown considerable promise as a therapeutic response to COVID-19.

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<sup>1</sup> Sources: "Cuba Uses 'Wonder Drug' to Fight Coronavirus Around the World Despite U.S. sanctions," Newsweek, March 24, 2020; "The world rediscovers Cuban medical internationalism," Le Monde Diplomatique, March 30, 2020; "COVID 19 medicine: India's Communist-ruled Kerala to get coronavirus wonder drug Interferon from Cuba," International Business Times, March 28, 2020; "Cuban interferon alpha-2b. Thirty years as an effective and safe drug," Biotechnol Apl. 2017;34(1); "COVID-19 in children: the link in the transmission chain," The Lancet, March 25, 2020; "Diagnosis, treatment, and prevention of 2019 novel coronavirus infection in children: experts' consensus statement," World Journal of Pediatrics, February 7, 2020; "Pharmaceutical care recommendations for antiviral treatments in children with coronavirus disease 2019", World Journal of Pediatrics, March 12, 2020.