
The Progress of Cuban Health and Biotechnology

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Abstract – The article showed by the author intend to reveals the reached achievements gotten about health, especially in biotechnology industry, as at the Center for Genetic Engineering and Biotechnology of Cuba (CIBG), which reaches its 29th anniversary with more than 50 researches and development projects, with positive results in the areas of health care, agriculture and environment. CIBG projects include human and veterinary vaccines, recombinant proteins for therapeutic uses, synthetic peptides, monoclonal antibodies, systems for diagnostics, as well as biotechnology of plants. The interest and labour exhibited by Cuban biotechnologist and their high level of professionalism not only in the same specialty, but at the same time in other skills and knowledge, such as English language potency and with the use of new informatics' technologies; necessary and indispensable in every aspect.

Keywords – Achievements, Results, Interest and Labour, English Language and Informatics Potency.

I. INTRODUCTION

Some Achievements of Cuba about Health and Biotechnology Sectors

Health is part of the human right from which everybody should be benefitted. Therefore, more than the middle of the world lacks medical service. Millions of human beings are obliged to live below poverty conditions due to the cost required for the care of their health, however Cuba is a model for the Health World Organization (OMS), and it is what this organization wants to see in the world and for many countries; because it has already some offers, also, its international collaboration and trains to many doctors from the Latin-American School of Medicine, allowing the advance and the health cover in America and other countries.

The primary attention of health makes up a main link of Cuban sanitary strategy, which linked the integration to other two attention levels and this have given the possibility to show similar indicators to developed nations, which means that health is a restrained right at the Republic constitution and the politic will of the state to keep it.

The budget assigned to this area and the social assistance represents the 27 % of total budget of state and the 11 % Gross Domestic Product. Cuba has a doctor per every 122 citizens, a stomatologist per every 602 and a nurse per every 128, reaching superior figures compared to countries from the first world

During 55 years of international medical collaboration 407 000 professionals and technicians have participated on this task, from them 183 338 doctors, in 164 countries, which exemplifies once more the humanistic vocation of the revolution, an unavoidable indicator to evaluate the successful grade of health system of this country about ophthalmology, biotechnology and other specialties.

Important ministers, vice ministers and representative from more than 50 countries express their opinions, among them the doctor Tedros Adhanom Ghebreyesus, general director of the HWO, at the opening of III International Convention of Public Health “Cuba Health 2018”. <<*I can't no more than to be grateful to Cuba by the model health system it has, which becomes to be among the best ones of the world*>>, he said in front of the Cuban president Miguel Diaz Canel Bermudez, Jose Ramon Machado Ventura, second secretary of the central committee of the party, and Carissa Etienne, director of Health's Pan-American Organization.

From Monday to Friday this event goes and Adhanom Ghebreyesus pointed out that it is not the first time that he travels to the biggest of the Antilles, where he finds something new, not only at the assistance area but also on scientific researches, on medicine and vaccine development.

About the Scientific Research, medicines and vaccines development the same doctor mentions that the Island has 160 patents for its medicines, it produces 8 of 13 vaccines, which are applied to the children population, and it is always opened to cooperate on international areas he expressed

Also he highlighted that the biggest of the Antilles has been able to form its human resources (doctors, nurses and technicians), willing to help other countries, and about it he added the presence of more than 48 000 Cuban professionals of health on this cooperation.

The general director of WHO (World Health Organization) mentioned to the national and foreign press it as another reason to learn from Cuba, the endeavor which makes to keep its sanitary system, for which he asked to divulge more about how it has been reached, these high sanitary indicators along with the Pan-American Health Organization (OPS) and local authorities. He stood out that on the III International Convention “Cuba Health 2018”, to which 2865 delegates from 93 countries attend, it was set out for the first time from the biggest of the Antilles the vaccination week in America, for getting this nationwide covertures of immunization of its children. He also underlined that the politic of the Island about this area is very associated to the OMS and OPS aspirations, about how to get a universal and free covertures, having as platform or main scenery the primary attention of health, in which he said that Cuba is an example.

With the excellent conference of universal health for sustainable development in Cuba, the doctor Roberto Morales Ojeda, vice-president of state council and minister of Public Health, was opened the convention.

The titular emphasized that in an unsafe world due to the threat to the world peace, the wars, feeding and water scarcity, the exhaustion of energy sources and the weather change, it is a responsibility of the health system, not only to cure, but also to alert and to require the need to protect our spice and to contribute to the safety of the people’s life, with dignity and that all this is a human right.

Morales Ojeda made an exhaustive journey through the Cuban public health history where the revolutionary triumph indicated a before and an after for the population welfare. In this sense, he said that Cuban health system has kept a continuous perfectionism carrying out necessary transformations in order to give answer to health situation at every moment.

Other recognitions were underlined by the Bolivian president Evo Morales, who took advantage of the opportunity to thank the Cuban solidarity on social justice, with health education programs, among them the “Milagro” operation, which has given back the vision to more than 700 000 Bolivians.

II. 48 000 PROFESSIONALS OF CUBAN HEALTH ON COOPERATION MISSION

About the event, Etienne added that the Cuban experience should be shared with other countries which are on the way to the universal health, and this convention is a place to share and discuss the right of every person to have access to health service of quality.

The III International Convention of Health, “Cuba Health 2018”, held the session in the Conventions Palace of the Capital, where different symposiums, workshops, open talks and other presentations are held.

The president of Cuba Miguel Diaz Canel assured that the country will continue developing its relation with the World Health Organization (OMS) and the Panamerican Health Organization (OPS).

During the meeting with the general director of OMS, Tedros Adhanom Ghebreyesus, and the director of OPS, Carissa Etienne, both parts coincided that the connection of the Island and the two organizations are fruitful.

As a relevant example they mentioned the successful experience of the fight against the ébola in the West of Africa

The visitors, who participated in the International convention “Cuba Health 2018” and the health fair for everybody 2018 eulogized the organization of both events.

In addition, greetings were sent to the revolutionary leader Raul Castro, who had finalized its second period as president of the government of Cuba a week before this event.

III. ADVANCE ON BIOTECHNOLOGY

During the second half of the XX century it were gotten important achievements on biology, which were essential for the biotechnology development. One of the most important was the determination of double helix structure of AND. This fact, was good for researchers James Watson and Francis Crick the novel prize of medicine in 1962, it allowed to understand how the AND determines the characters of a person and how are transmitted from a generation to the next one. From this act was possible to know that all organisms, from the simplest to the most complex have a common genetic code. This means that the AND of an organism is “written” on a code which could be performed and given by cells from other organisms. It was known that the genetic information in all cells is given to proteins, main components that perform a big diversity of functions. Between them the enzymes that are proteins which catalyze (accelerate) chemical reactions in the human beings, which were discovered at the beginning of the 70’s and these were very helpful for the biotechnology.

The biotechnology has played an important role in Cuba in the last years in spite of the economic crisis, from 1989 a reform it is carrying out of the sector, amidst a certain polemic: if it is right the government hold up that all Cuban have access to doctors, nurses, specialists and medicines, these last ones were tightfisted caused by the restrictive effects on the availability of resources due to the Soviet Union’s disappearance, its main supplier when the Torricelli law was promulgated, many signs that traditionally had sold medical equipment or its components to Cuba discontinued its operations because of the negation of the treasure department of USA. The licenses of exportation, because these are subsidiary of any North American transnational or because of having the equipment with components from the same country. The results of these problems caused bigger consequences, such as, an insufficiency of medicines, raw material for the pharmaceutical industry, and the not renovation of medical equipment, this provoked major investment on this sector whereby the country imports less than 20 % of medicines that consumes and produces some medical equipment, everything else it is imported by European corporation as Philips or Siemens.

However, according to World Health Organization (WHO), the indicators of Cuban Health are compared to the highest developed countries of the world. The free education system has produced approximately three times more the doctors’ density, 7, 5 for one thousand persons, than in the EE UU and the United Kingdom. Most of medical equipment, as the medicine have been developed and produced in the country.

Many Cuban scientists have been devoted to the searching and diseases' cure, engaging alternatives which could replace the chemotherapy and radiations in the future, extending the proteins' discovering of Interferon that contain the protein as treatment to cancer and other diseases. The Cuban government chose to search deeply about biotechnology, which has been redeemed on vaccines and medicines terms.

The biotechnologist investigators professionals from Cuba develop 101 searching projects, from these a great percentage is focused on oncology, especially on cancer and neurological disorders; emphasizing the experience of Cuban professionals on Bio Cuba Farma industry, which pays to health national system. The Cuban biotechnologists have been recognized from 80 years by the discovering of impact products to the health system, giving answer to integral programs concentrated on diseases as cancer, chronic ones not transmittable, the hereditary; stoppage of congenital malformation and prevention of infectious diseases.

A small team with a restrict budget has been able to research and to get the vaccine against cancer, which has cured a big quantity of persons. The scientific community is impressed by the Cuban discovering, and many doctors claim: The cure against cancer finally has been gotten!

The vaccine has shown incredible results, even during the most advanced stages. Finally it is seen the daylight after 16 years of searching and without any side effect, which already has been used on clinical essays in EE UU, it does not mean to prevent the future apparition of the illness as a traditional vaccine, in this case vaccine refers to that CIMAbax causes an immune response; as with a vaccine, with all these signs the immune system of the self person to upset the growing ability of cancer.

Heberprot-p was developed by the BioCubaFarma institute from genetic and biotechnology center (GIGB) awarded from 2006 and it has been awarded in more than a dozen countries of Central and South America, more than 250 000 persons have been treated with the medicine.

Currently, out of 857 medicines on the list of medicines approved in Cuba to be used in the national health system, 569 are produced domestically Permanent importation of medicines from Latin America, China, and Asia.

The treasure on the top of BioCubaFarma are in a group of the institute of biotechnology focused in the vaccines and antibodies development, these institutes are very good, and it is not accidental that Cuba is excellent about these, the vaccines tend to be proteins from the sugar cane, even Cuba has abundant sugar, Cubans have become incredibly good about this product and the combination of these, possibly the best chemical ones of sugar.

IV. THE MOST IMPORTANT CENTERS AND PLACES WHERE BIOTECHNOLOGY IS DEVELOPED

Thanks to multiple educational programs that helped develop the necessary professional base, since the 1980s Cuba has followed a strategy of development of biotechnology, and in 1981 the Biological Front was created, of which various scientific institutions formed a part. In the same decade, several scientific centers were created, such as the Center for Biological Research; the Center for Genetic Engineering and Biotechnology (CIGB); the Center for the Production of Laboratory Animals (CENPALAB); the National Center for Biopreparations (BIOCEN); and the Immunoassay Research Center and the Center of Molecular Immunology (CIM). In addition, other institutions were remodeled and expanded for insertion into the biotechnology industry, such as the Pedro Kourí Institute of Tropical Medicine (IPK) and the Finlay Institute.

Since the mid-1980s to the present, biotechnology has spread to several provinces across Cuba, with the opening of the Camaguey Center for Genetic Engineering and Biotechnology and the Institute for Plant Biotechnology at the Central University of Las Villas in Villa Clara, as well as similar institutions in Ciego de Avila, Sancti Spiritus, Holguín and Santiago de Cuba.

The country also has an extensive network of bio-factories for the production of in vitro plants in order to improve the agricultural sector, with new varieties created which are more resistant to diseases and pests in crops such as sugarcane, potatoes, tobacco, bananas, vegetables and citrus.

V. CONCLUSION

The performed article exposes the achievements gotten by Cuban Scientifics at health's area, specially the biotechnology; it is explained wide details about these. Such as the held events in the country, and the opinions exposed by the participants, specifically their grateful to Cuban government. Also it is declared the Cuban scientific successful with the vaccine against the diabetic foot's illness, and finally it is given a detailed information related to the most important searching centers from the country, mainly in biotechnology sector, which helps to prevent and cure animals, plants, and human health. At the same time it is showed the high professionalism level of Cuban biotechnologists, not only about health, but rather, to the use of new technologies of informatics and the essential practice of English language as necessary tools for investigative projects' development, carried out by them.

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