

One does not frequently hear of Cuba when discussing today's integrating global economy. Cuba appears isolated, politically and economically, mainly due to trade restrictions placed on it by the US in the 1960's. No wonder, says the author of this Straits Times article, the world is surprised to learn of Cuba's flourishing biotech industry which has contributed much to the field of biotechnology and medicine. Since its establishment in the mid-1980's, the Cuban biotech sector has developed a meningitis B vaccine, and today exports the **world's most effective hepatitis B vaccine** to more than 30 countries. Recently, it developed the first synthetic vaccine for the prevention of pneumonia and meningitis, which is much cheaper than what is offered by Western pharmaceutical companies. Poised to provide anti-cancer therapies to the European market by 2008, Cuba is also eagerly looking to enter the western market, and many observers are cheering it on. – YaleGlobal

Cuba Ailing? Not Its Biomedical Industry

👤 Tom Fawthrop 📅 Monday, January 26, 2004

MENTION faraway Cuba and most people think of a Caribbean island best known for Havana cigars, rum and the revolutionary exploits of Che Guevara. They probably don't associate it with cutting edge medical research.

Yet Cuban biotechnology is now, among other things, leading the way in the development of a new generation of anti-cancer therapies expected to be available to the European market by 2008.

Given Cuba's cash-strapped economy, its scientific achievements are all the more surprising. It has long been battered by the United States trade embargo, imposed in the 1960s and still in force today. After the Cold War ended, Washington tightened the economic screws further with resulting shortages of consumer goods.

When Marxist revolutionary Fidel Castro came to power in 1959, most of Cuba's resources were ploughed into developing education and health systems. In the mid-1980s, with aid from the Soviet Union, Cuba started to invest heavily in science and biotechnology.

Although it is a small country with only 11 million people, it now boasts 52 scientific research institutes in the capital and more than 12,000 scientists on the whole island.

Cuba's health indicators - the infant mortality rate is 6.4 per 1,000 and life expectancy is 75 years - put it in the same league, health-wise, as the US and Britain. The quality and efficiency of its comprehensive, and free, health-care system contrasts sharply with the sluggish and inefficient state-controlled economy.

Cuba pulled off its first scientific coup with the discovery of a new vaccine for meningitis B in the late 1980s. The vaccine controlled epidemics at home, and obtained good results abroad especially in Argentina and Brazil.

Havana's Carlos J. Finlay Institute has entered into a deal that allows major drug multinational GlaxoSmithKline to license its discovery in order to facilitate the first entry of a Cuban medical product into the more lucrative Western market.

Professor Michael Levin, head of the Paediatric Unit at St Mary's Hospital in London, and who is pioneering a joint UK-Cuban medical research project at the Finlay Institute, told this correspondent that despite its economic problems, 'they have excellent laboratories, and their doctors and scientists have maintained world-class standards'.

Another centre of excellence is the Pedro Kouri Institute of Tropical Medicine (IPK) which works closely with the United Nations World Health Organisation in Geneva. It is currently working on a new cholera vaccine and seeking to match the efforts of Western countries in the race to find the first vaccine against Aids.

'IPK is respected throughout Latin America and beyond,' says Professor Paul Farmer, professor of medical anthropology at Harvard Medical School. 'With a comparatively tiny budget - less than that, say, of a single large research hospital at Harvard - IPK has conducted important basic science research, helped develop novel vaccines, trained thousands of researchers from Cuba and from around the world, and developed ties with researchers in the US, too.'

Visiting Western scientists are often surprised by the scale and size of the Cuban Biotechnology Centre (CIGB) which opened its research and development facilities back in 1986. In 1994, this was complemented by the launch of a Centre for Molecular Immunology, which has pioneered the latest research into anti-cancer vaccines. Other scientists are engaged in developing an anti HIV-Aids vaccine.

TECHNOLOGY TRANSFER

DR ROLANDO Perez, one of the top scientists at CIM-Centre of Immunology, points out that the Cuban biotechnology model is 'completely different' from the development of Western pharmaceutical products. 'Pure scientific research, innovation and product development, production and marketing are all integrated under the same roof, or at least in the same institution.'

In a country where there are no private hospitals, and all pharmaceuticals are publicly owned, inevitably all investment comes from the state.

Orthodox Western economists would tend to dismiss this socialist model of medical innovation and production as a quaint aberration in today's world, clearly out of synch in the globalised economy. But the Cuban record boasts 26 inventions with more than 100 international patents already granted.

One of the major earners is the successful export of the hepatitis B vaccine to more than 30 countries. Dr Pedro Lopez, who directs the testing of Cuban biotechnology products, said that 'all the clinical trials have shown that it is the most effective vaccine (against hepatitis B) in the world'.

Although the US and France also manufacture a hepatitis B vaccine, there are Western experts who support the Cuban claim. Mr Louis Baretta, head of Aventis Pasteur, a big Canadian pharmaceutical, told The Financial Times in June 2002: 'Their work on hepatitis is likely to become the standard for the rest of the industry.'

The first synthetic vaccine for the prevention of pneumonia and meningitis is the latest Cuban breakthrough. Aimed at lowering the cost of immunising children in poor, developing countries, the vaccine was launched late last year before a gathering of world experts at Havana's International Biotechnology Congress.

This vaccine protects against bacteria that cause respiratory infections mainly in children up to five years old, and is touted as much cheaper than the conventional one offered by the multinationals which costs US\$3 (S\$5.10) a dose.

Asian countries, eager to develop their own biotechnology sectors, have been forging links with Havana. Malaysia last year signed a Memorandum of Understanding for scientific cooperation. An information attache at the Malaysian embassy in Havana said: 'It is a good opportunity to learn and we are planning to bring Malaysian delegations over here to consider joint ventures.'

India's Biocon India Ltd signed a deal with Cuba's Centre of Immunology in February last year to set up a production plant in Bangalore. It will manufacture a select range of biotechnology products primarily for the Indian market based on a 51-49 per cent partnership. Cuban scientists will provide the technology transfer in the production of recombinant monoclonal antibodies for use in cancer treatment designed to target tumours.

SOCIALIST GOAL

A SIMILAR agreement was earlier signed with China in 2002 to produce humanised monoclonal antibodies to treat head and neck cancers.

Cuba's achievements in oncology were reported in a joint paper published in the International Journal of Cancer in June 2002, co-authored with Canada's Dr Alicia Vilorio-Pettit.

Cuba has also set its sights on breaking into the Western market and has been actively seeking joint venture partners. Last month, a Cuban anti-cancer therapy known as TheraCIM hr3 was contracted to a joint venture with the German pharmaceutical Oncoscience AG of Wedel. The German partner will be responsible for taking the Cuban product through further clinical trials and regulatory processes so that it can enter the European market.

With its anti-cancer drugs, Cuba's long-term strategy - which has seen nearly US\$1 billion invested since the late 1980s - may finally be paying off.

As Dr Perez sees it: 'We have all the potential and if we get access to the Western market, then this hi-tech sector could become the locomotive of the entire Cuban economy.'

It can then be less dependent on its cigars and its ailing sugar industry.

Does all this mean that Cuba is changing to a more profit-oriented perspective?

'Absolutely not,' says Dr Perez. He insists that Cuba's drive to enter the world market is in the service of a socialist goal. 'I want all cancer patients in Cuba to receive these drugs for free and we need all the money we can get to finance our free Cuban health service.'

Harvard's Dr Farmer is excited at the prospect that US and Cuban medical research could one day form a partnership to combat the world's diseases. 'If we were to join forces with one of the developing world's premier research institutions to develop new tools to control or treat disease, it would be, as Shakespeare put it, 'a consummation devoutly to be wish'd'.'

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