

Cuba winning cancer race

Economic isolation and a passion for healthcare yield a world lead in genetically engineered medicine

Julian Borger in Havana

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Clinical trials of a cancer therapy genetically engineered by the Cuban biotechnology industry are due to begin in London next month. It may prove to be a landmark both for medicine's struggle with the disease and Fidel Castro's attempts to break out of Cuba's US-imposed isolation. Despite a stark lack of resources, laboratories in the impoverished suburbs of the capital Havana have made startling strides in developing revolutionary vaccines and antibodies against meningitis, hepatitis, and lung, breast, head and neck cancers.

But their use in other parts of the world has been hindered up to now by the Helms-Burton Act, the US measure which penalising foreign companies for dealing with Cuba.

That hitherto impenetrable wall is now beginning to crumble in the more general thaw in US-Cuban relations, and western investors have found that Cuban scientists, subsisting on scarcely £10 a month, are ahead in some fields of their colleagues in the US and western Europe in the race to produce genetically engineered medicines.

After months of intensive lobbying, the British pharmaceutical company Smith Kline Beecham succeeded a year ago in persuading Washington to give it an exemption from the act, allowing it to develop and market a Cuban vaccine against the child-killing disease, meningitis B. It is the only such vaccine in the world, and is undergoing trials prior to being launched in Europe.

In the past few weeks, as international investors have grown less afraid of US retaliation, a Canadian venture capital firm, York Medical, has secured funds for clinical trials of Cuban cancer vaccines and antibodies.

Its director, David Allan, said that trials of a cancer vaccine would begin in Britain "in the next few weeks" on cancer patients who were not responding to conventional treatment. The hospitals involved cannot be named for contractual reasons.

"We already know it is effective," Mr Allan said. "What we are doing is confirming clinical trials. We all know the answer."

The vaccine does not prevent cancer in a healthy person, but it prevents existing tumours spreading. It works by provoking the immune system into making antibodies against epidermal growth factor (EGF), a naturally occurring protein which plays an important role in childhood development but seems to have no function in adults other than nourishing tumours.

The problem in reducing its supply was to find a way to provoke the immune system into fighting a substance normally found in the body.

The Cubans found a way by bonding EGF with a bacterial protein known as P64k, which promotes an immune response to both and thus mops up the supply of EGF.

York Medical says that the vaccine has already produced impressive results in Cuban tests, increasing the average survival time by 200%.

"There's a certain degree of inventiveness in Cuba, of thinking outside the box," Mr Allan said. "We all learn the same words, the same things in medical school, but the Cubans are not bound by what has been in the past."

They have also developed an antibody which could provide a second line of attack against certain tumours. It works by blocking EGF receptors on cancer cells and prevents them connecting with and being nourished by the protein.

The strategy, first laid out by a Cuban scientist, Rolando Perez, in a scientific paper in 1984, not only stops the tumour growing but weakens the cancer, making it far more vulnerable to chemo- and radio-therapy.

To Cuba the success of these trials is essential. In the last 10 years, President Castro has ploughed an estimated \$1bn into its cluster of biotech institutes, capitalising on a long-term investment in medical expertise which has given Cuba more doctors per capita than any other country in the world.

Mark Rasenick, a University of Illinois physiology professor who watches Cuba's progress, said: "Because they have a surfeit of physicians, they are able to allow the best and the brightest to engage in work which supports a system of biomedical research. It's considered a national priority."

The investment also represents, in the words of a diplomat in Havana, "Fidel's moon-shot" - a bid for national greatness and an impudent challenge to the US monolith in the great scientific race of the era.

But Jose Suarez, whose job it is to find foreigners to invest in Cuban scientific discoveries, points out that the country's achievements save lives. It is not national vanity, he argues, but "a national necessity".

"The world is not interested in paying to cure the diseases of poor countries," he said in his office in the Finlay Institute. "The existing cholera vaccine is for tourists. It works for 30 days, but if you live in a poor country there is no vaccine for you. We are testing a cholera vaccine for people who live in the Third World."

The meningitis B vaccine was developed as an emergency response to an epidemic in the 1970's. The government gave 15 researchers the task of finding a solution in a hurry. They tested the prototypes on their own bodies, and finally came up with a vaccine that was 84% effective.

By 1990 meningitis was no longer a serious threat in Cuba. In blocking its international use until last year, Mr Suarez said, Washington was striking at Cuba but harming the world's poor and young.

The licence given to Smith Kline Beecham last July is the only one of its kind, and it is hedged with restrictions which deny Cuba the right to cash royalties but allow it limited amounts of US

medicines as a barter payment. It is a grudging exemption.

Mr Allan thinks that if the cancer trials prove successful it will be politically impossible for Washington to suppress the Cuban vaccines.

Two months ago, York Medical was on a knife-edge. It had bought the rights to the Cuban vaccines and antibodies but potential investors were wary of putting money into a project that would be ultimately strangled by Washington's embargo. The funds for trials, mostly from British and European investors, have only come in in the last few weeks.

Mr Allan believes that investors have drawn the same conclusion he has: that the US embargo is "headed for the ash-can where it belongs".

The measure which is currently before the US Congress does not kill the Helms-Burton legislation but will leave it vulnerable. And it is almost unthinkable that the American public will continue to tolerate the act if it becomes a barrier to importing effective cancer treatments.

Mr Rasenick believes that Cuban biotechnology will help to bring down the sanctions. "As a scientist, I would never continue the same failed experiment for 38 years," he said.

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