



Smart Biotech Provides Early HIV and Hepatitis C Detection Critical for Safe Blood Bank Supply

The window period between infection and when evidence of the infection can be detected through antibodies in the blood can last for many months. Technology developed by Dr. Tamar Jehuda-Cohen provides in vitro stimulation of HIV-specific and Hepatitis C-specific antibodies in blood samples enabling the detection of carriers within a week of infection.

Experimental Biology and Medicine doesn't usually provide personal details about the authors of studies, but in a recent press release, the prestigious scientific journal describes clinical investigator Dr. Tamar Jehuda-Cohen as the mother of seven.

"When they called to say that the paper was accepted for publication, I mentioned that I feel a strong personal connection to the lives of the people my work affects, especially pregnant women," said Dr. Jehuda-Cohen in an interview.

The EBM study (234:vi, 2009), highlights a major problem affecting the detection of HIV-infected carriers in the developing world and offers a potential solution.

The HIV-detection-problem stems from the false negative test results that occur when blood samples are drawn during the serological-diagnostic window period.

The window period – the time between HIV infection and when evidence of the infection can be detected through the presence of HIV antibodies in the blood -- is generally considered to last about 8-10 weeks.

That's in the developed world.

But as shown in the EBM study carried out in Kenya, and in other studies conducted in the developing world, the HIV window period in some populations can be considerably longer – often as long as six months.

The delay in the body's production of detectable anti-bodies is believed to be the result of various immune suppression factors, starting from the virus itself and including existing chronic infections such as parasitemias and deficient nutrition. Among pregnant women, immuno-suppression is particularly pronounced.

Detecting HIV-carriers during the window period is not only critical for the provision of a safe blood bank supply; it also can dramatically affect the lives of newborn babies.

"A pregnant woman testing false negative for HIV will not be offered ART which could have saved her baby," said Dr. Jehuda-Cohen, referring to the short-term treatment which can be used to prevent transmission of HIV from HIV-infected mothers to newborn babies.

One promising solution to this problem is a technology developed by Dr. Jehuda-Cohen that provides in vitro stimulation of HIV-specific antibodies in blood samples enabling the detection of HIV carriers within a week of infection.

In the EBM study, a research team headed by Dr. Jasper Mumo of the University of Nairobi, Kenya, used the technology, known as the SMARTube (Stimulating Maximal Antibody Response Tube), to detect infectious blood units missed by regular HIV serology.

The application of the technology involves a simple procedure whereby blood samples are pre-treated in a formulation that stimulates the production of HIV-specific antibodies. The plasma is then tested using regular HIV-specific antibody tests.

The SMARTube technology, which represents the culmination of more than 15 years of research conducted by Dr. Jehuda-Cohen, is expected to have wide applications in developing countries. In addition to making blood banks safer, international health organizations are planning to use the device as an important tool in determining rates of AIDS incidence as part of programs designed to contain the spread of the infection.

The technology is also expected to have an impact on HIV detection in the developed world. Smart Biotech, is a Rehovot-based company founded to produce and market the product. The company has already obtained marketing approval in Russia, Turkey, Nigeria and the EU. FDA approval is expected in the near future.

In addition to detecting HIV antibodies, the SMARTube also can be used to significantly shorten the

window period involved in detecting Hepatitis C antibodies. About 180 million people currently are estimated to be infected with Hepatitis C. It is to this market that Smart Biotech is addressing its initial marketing efforts.

“We are beginning in places where there is an acute need for diagnosing Hepatitis C early on,” says Yisrael Serok, CEO of Smart Biotech. He lists Russia, Turkey, Ethiopia, Romania and Hungary as some of the markets where the product has been launched.

To date, the company’s technology has been used in the pre-treatment of tens of thousands of blood samples prior to testing.

But with more than one billion blood tests conducted worldwide annually, says Serok, there is ample room for the company to expand its marketing.

“We expect SMARTube eventually to be used in a sizeable portion of the global tests,” he concludes.

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