



INTERVIEW

A challenge to pseudoscience

Egyptian expat questions claims that devices noninvasively detect viruses in blood and treat infected people

By John Bohannon

Earlier this year, the Engineering Authority of Egypt's military announced a hand-held instrument that could detect a variety of viral infections without even touching a person, and another device that clears a patient's blood of viruses. Treatment of Egyptian patients with both devices was due to begin 30 June but 2 days before, the militia announced plans for "more testing" on the latter device. According to government officials, the devices will not only wipe out AIDS and hepatitis at home—Egypt has the highest prevalence of hepatitis C in the world—but will also make a fortune as foreign patients flock to the country. Whereas the Western scientific community has ridiculed the devices as pseudoscience, Egyptian academics have been largely silent. The country's military regime has been handing down harsh criminal punishments to its critics, including journalists. But one expat Egyptian scientist, Islam Hussein, has created videos explaining the devices' scientific problems, one of which has garnered more than 100,000 views on YouTube—a large number considering they are 80-minute Power-Point presentations in Arabic. Like most of Egypt's top scientific talent, Hussein, 36, left his country. After a virology Ph.D. at the University of Cambridge in the



United Kingdom, he settled at the Massachusetts Institute of Technology in Cambridge in the United States, where he researches avian influenza. This interview has been edited for clarity and brevity.

Q: What do you know about these devices?

A: The first is called C-FAST. [The Egyptian Armed Forces] claim that the antenna of this device can detect an infected patient from a distance of up to 500 meters. The device doesn't even need a battery; it is powered by the body's static electrical energy. The antenna supposedly detects the electromagnetic waves emitted by the vibrations of the hepatitis C viral genome in a sequence-specific manner. C-FAST is one of a big series of devices that detects several viral infections: HIV, hepatitis C, influenza, MERS coronavirus, and the malaria virus. Yes, malaria [caused by a protist] is now promoted to the rank of a virus.

The second is called the Complete Cure Device [CCD], which looks very much like a dialysis machine. It draws blood from the patient using a pump. The infected blood passes through an expensive spiral tube—it is made of a very specialized material that its maker claims took 7 years to develop. The tube emits a mysterious radiation—it is a military secret—that kills the virus and then the blood is returned to the body.

Q: What makes them implausible?

A: For C-FAST, the research team has not presented any scientific evidence that electromagnetic waves emitted by viral nucleic acids are even detectable, let alone diagnostic. A discovery of this caliber deserves a *Science* or *Nature* paper. They claim that the electromagnetic signal of every virus is like a fingerprint that can be programmed onto a small chip inside the C-FAST device. By replacing a hepatitis C chip with one for influenza, a device becomes capable of detecting the flu-specific electromagnetic signal and so on.

As for CCD, we don't yet have a single scientific publication describing how this device is safe and effective. We have heard three conflicting mechanisms of action. Exposing a patient's blood to radiation will not rid him or her of hepatitis C replicating in the liver or HIV integrated into the genomes of infected CD4+ cells. They claim to have done experiments with chimps; they even claim that thousands of people were treated during a clinical trial. Again, where is the data?

Q: Are Egypt's scientists speaking out?

A: Essam Heggy, a research scientist at NASA's Jet Propulsion Laboratory and the former adviser of the ex-president of Egypt, issued a statement that this whole thing is a big scandal. He has been attacked by Egyptian media day and night. Very few Egyptian doctors have spoken out.

Q: What motivated you to make those videos?

A: I couldn't stand by watching this happen in my home country and keep quiet about it. This "cure" will affect millions of Egyptians, from the side effects of an unregulated, potentially toxic therapeutic device to false hopes that lead infected people to not take the necessary precautions.

Q: Are you worried about getting noticed by the government?

A: No, I am not worried. These videos were all about science and science only. There is no reason for the current regime or anybody at the Egyptian Armed Forces to get upset with what I have said.

Q: What impact do you hope to have?

A: Many people have made fun of the devices. However, nobody has taken the initiative to take them seriously and explain to the public why these claims are baseless. I was also hoping that my voice will reach the people behind these inventions and persuade them to change their course of action. ■