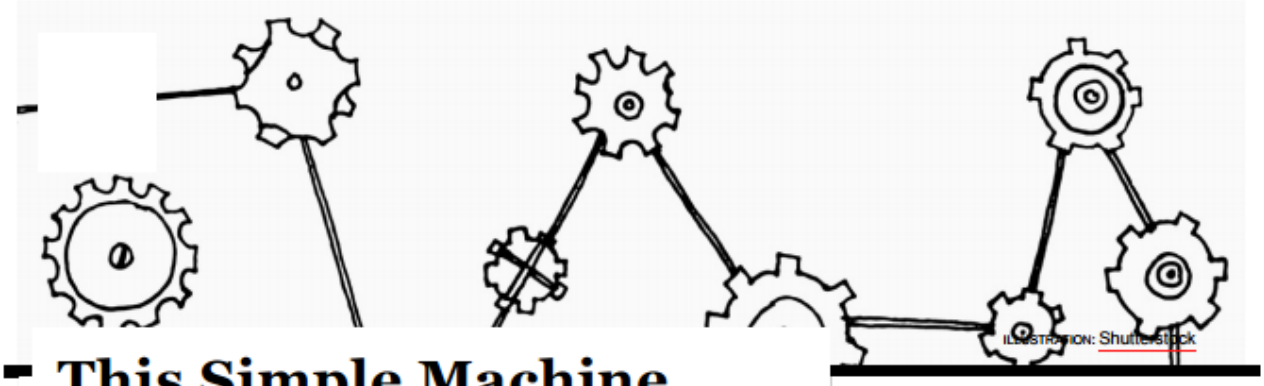

This Simple Machine Detects Fake Drugs In The Developing World

A large number of the drugs in the developing world aren't what they claim to be. Sometimes this means nothing, sometimes it's downright dangerous. This new machine will (cheaply) help solve the problem.

Counterfeit medicine is a major problem in the developing world. According to the World Health Organization, up to 10% of drugs circulating are fake, and in all likelihood, the numbers for certain countries in Africa are higher.

"Especially in Africa, we know it's a very big problem," says Serge Rudaz, an associate professor at Geneva University's School of Pharmaceutical Sciences. "We know that people in the drug mafia are moving to the counterfeits."

The problem is exacerbated by a lack of formal quality control, high rewards, and the relative ease of producing a few believable-looking pills. "Producing counterfeit drugs may not require building huge infrastructure or facilities," the WHO says. "They can be produced in small cottage industries or in backyards or under the shade of a tree."

While in rich countries, the most-traded fake drugs are patented products like Viagra, in Africa it's more likely to be antibiotics, hormones, analgesics, steroids, malaria pills, or antihistamines—basic stuff. Rudaz says it varies by the country.

To try to do something about the problem, he has come up with a relatively cheap machine that labs can use to detect the fakes. Costing about $10,000, it is about a tenth of what commercially available machines go for. And, as such, Rudaz's organization is able to give away the technology, with a little help from donors. So far, they've donated to labs in Senegal, Mali, Cambodia, and D.R. Congo, with machines set to go to Burkina Faso, Madagascar, and Rwanda, soon.

The machine uses a century-old technique called capillary electrophoresis that wasn't previously applied to drug detection. Technicians simply fill a thin tube with water and a small amount of solvent, apply a high voltage, and then watch the diluted drug pass under the electric field. By watching how fast it moves, they can assess its validity.

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> **We know that people in the drug mafia are moving to the counterfeits.**

The machine is good for finding flat-out fakes, drugs with the less the right amount of active ingredients, or medicines with impurities. That covers about 80% of counterfeits. Rudaz says he initially approached manufacturers to see if they were interested in developing the design. But they couldn't see a market in it. Because the machine uses very little solvent, it is like a "low-cost printer where the ink is also low cost." "You have no business," Rudaz.

But the simplicity of the device does make it easy, and relatively cheap, to export. Alumni of Geneva University, and its partner, the University of Applied Sciences in Fribourg, have chipped in with donations. "We know that we are supporting people who are trying to save lives in the country, and supporting people who are making education about counterfeit medicines," Rudaz says.

Still, he knows there is a limit to what one machine can do. "You won't solve counterfeits completely. We detect some drugs, but the problem remains. The problem of counterfeits is not only a problem of analytics. It is also a problem of economics and society which is too big for me."

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