

ROBOT PILL INSTEAD OF SYRINGE

How a start-up wants to change medicine

by Matthias Hohensee
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Silicon Valley start-up Rani Therapeutics is working on a pill that replaces drug injections. The transport mechanism has now been tested for the first time in humans.

Is it possible to administer medication that needs to be injected as a tablet without compromising its effectiveness? For decades, researchers have been trying to do this for biopharmaceuticals - drugs made with genetic engineering. These include, for example, hormones such as insulin.

In contrast to conventional medicines such as aspirin, these cannot be so easily swallowed. Insulin would be destroyed during digestion before it can lower blood sugar levels. Therefore, it has to be transported via injection directly into the bloodstream, which is painful and annoying for those affected. Still.

The Silicon Valley start-up Rani Therapeutics packs sensitive medication into a swallowable capsule that not only resists the acids and enzymes in the intestinal tract, but also activates them selectively. It has collected 142 million dollars for it. The venture capital comes, among others, from Google and the pharmaceutical companies Novartis and Astra Zeneca.

Rani Therapeutics "robotic pill" is covered with a special protective coating. After their dissolution in the digestive tract, a small balloon is inflated by a chemical reaction, the pressure of which pokes a microcrystal of sugar crystals with the agent into the intestinal wall. Because this does not have pain receptors, the patient does not feel this. The capsule is then excreted as normal after a few days. So the idea.

Founder Mir Imran believes that he has come much closer to the "holy grail" of swallowable biopharmaceuticals - at least concerning the mechanism and compatibility of the capsule.

What has so far only been tested in animal experiments has now been confirmed in a first study with patients. The 20 subjects swallowed the robotic pill, which activated as planned in the intestine. The scheduled dissolution of the transport capsule was successful both in persons with empty and full stomach. The remains were eliminated without problems. Food intake, according to Imran, does not disturb the process. Above all, the subjects did not feel the capsule at all. "In contrast to animals, we could ask people if they felt something in their stomach," says the inventor.

In the next study, which is planned for this year, now the release of the remedy over the needle is to be tested. After that, according to Imran, it will take a few more years for the method to be approved by the regulators. The approval must be obtained separately for each active substance.

However, the capsule will not completely replace the syringe because it cannot absorb large amounts of medication. It is intended for chronic patients who regularly need to take a smaller amount of active ingredients. For diabetics of type 1, so they cannot produce insulin, it is not suitable.