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Taste+ promises to make something like Soylent as appetizing as foie gras without changing its nutritional content in the slightest.

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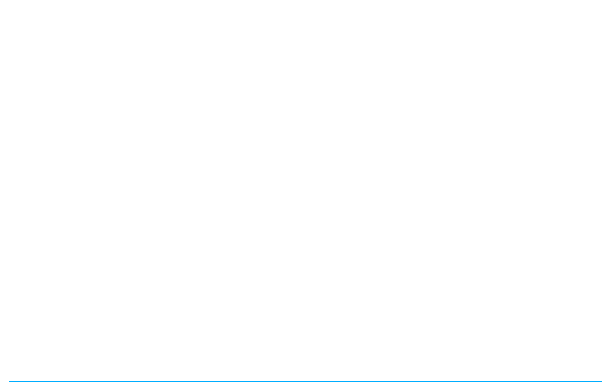
Image: Yuliya Tsoy/Vice

≡ If Soylent is not the future of food but only its immediate present (my brother, an Apple engineer, is treating what **MOTHERBOARD** of appendicitis by exclusively consuming the monochrome mush), then what will we eat in decades to come?

Why, Soylent that tastes like anything we want it to, of course.

One problem with talking about the future of food is that we already engineer foods to have precisely the flavors that will please our tongues. Before the chemical engineering of junk food, this process of flavor optimization was just called "cooking." But an engineer at the National University of Singapore is pioneering a new method using electrical impulses, rather than deep-frying or braising, to manipulate our tongues.

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Call it virtual taste; the technique promises to make Soylent as appetizing as foie gras without changing its nutritional content in the slightest.

The device is sort of like an Oculus Rift for your mouth

Dr. Nimesha Ranasinghe, a research fellow at NUS, has invented Taste+, a range of spoons and water bottles with embedded electrical diodes that hit your tongue at the same time as whatever you're eating or drinking does. Electrical charges change the flavor you experience to bitter or sweet, salty or sour, depending on their frequency and amplitude. "If you want to simulate taste, there are two places we can tap into. First the tongue, then the brain," Ranasinghe said in a Skype conversation. "The brain can be tricky, so we focused on stimulating the tongue." The device is sort of like an Oculus Rift for your mouth.

Our taste receptors function in part via ion channels, which communicate directly with the brain—and these channels can be short-circuited via electricity. A sour taste, for example, can be induced by a current of 180 microamps to an 80 percent degree of accuracy, according to Ranasinghe. Other tastes are more difficult. "The same ion channel is responsible for identifying bitter and sweet sensations on the tongue," he said. Thus, they're harder to differentiate, and the Taste+ system can only simulate them with a 50 to 60 percent degree of accuracy.

The technology, which won second prize in a design competition at the Stanford Center on Longevity in 2014, was originally developed as a way to help the elderly and

to see how the technology can be put to use. But already they've found that user-experience design is difficult. Not everyone is open to the uncanny valley of virtual taste.

"We wanted to change taste sensations using a small button, but with elderly people who are not familiar with this kind of technology, they don't want to use these things," Ranasinghe explained. "We decided to use three spoons for three different taste sensations."

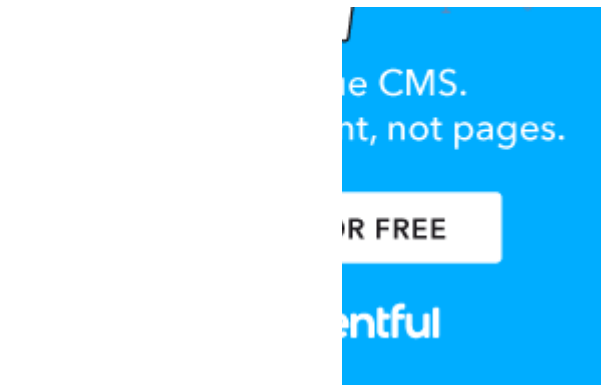
The beta-testers' hesitation is understandable. Taste+ is about creating a new way of interacting with food, after all. It suggests a future in which your eating implement might impart more flavor than whatever you use it to eat. Pure water could taste like Gatorade. "You could just eat plain yogurt, which doesn't have any chemical for simulation of other flavors, but digitally simulate strawberry," Ranasinghe theorized.



A Taste+ spoon and cup. Image: Dr. Nimesha Ranasinghe

That is, as long as you're down with the tongue shocks. The technology isn't quite seamless. 99 percent of test subjects can feel the electrical stimulation on their tongues when it happens, according to Ranasinghe, but only 80 to 90 percent "can correlate it into taste sensation, sour or saltiness."

Yet, our experience of food involves more than just electricity. Scientifically, the definition of "taste" is limited to the sensations of the tongue—sweet, sour, salty, and bitter—which are also stimulated by proteins and other chemicals that Taste+ can't produce. Then there's a whole other range of food experience, defined under flavor. "Flavor is a more complex sensation," Ranasinghe said. "It's made up of smell, taste, vision, the texture of the food, and previous experience." In fact, smell plays a larger part in flavor than tongue-taste does. So while electrical shocks might simulate basic taste, they can't recreate the wider cultural experience of eating.



Still, the device hints at a coming era in which the content of food matters less than our perception of it. We can drink kelp juices mixed with high-protein pulverized grasshopper powder all day long because our glasses will make it taste like chocolate milk. Our Bulletproof coffee doesn't need to taste like yak; in fact, it doesn't have to taste like coffee at all.

The future of food has long been viewed through the prism of *The Jetsons*: meals shrunk to pill form, for the ultimate in convenience, but still retain all the flavors and nutrients of their messier predecessors. The pill is still a hamburger, but in a different form. Taste+ points toward a different, perhaps more likely future, a future of that any-flavored Soylent: nutritionally calibrated, textured mush that, like the practice of combining Jelly-Belly beans, tastes like anything we want to eat. The hamburger no longer exists, in pill form or otherwise. Only nostalgia for the memory of its flavor is left.

Related Video: Watch Motherboard's Brian Merchant live off Soylent for 30 days.

While Ranasinghe is aiming his product at medical applications, it's far too potent to stay limited to that for long. Taste+ embodies the qualities that make the most mainstream technology so popular: it feeds our existing addictions, or creates brand new ones. Except, instead of looking at our phones every 10 seconds or seeking the dopamine rush of Instagram likes, the device will make us unwilling to experience any taste that we don't want to, because our electrical spoons and water bottles will ensure that we don't have to.

Can we manufacture the taste of Proust's madeleine, the cookie that brings the past rushing back? The question isn't far from Ranasinghe's mind. When asked about the future of his technology, the inventor mentioned interest from food and beverage companies wanting to build new tasting implements, though no deal for Amazon distribution yet. But he also has more creative ideas.

Ranasinghe brings up the ultimate food memory: mom's cooking. We might try to explain food through writing, Instagram photos, or effusive recommendations, "but nothing can really explain but the real taste is," he said. "With Taste+, you could plug in, download the taste of grandma's curry, or mushrooms, then taste the same thing. Drinking wine, you could capture the taste and send it to your girlfriend. These are the new interactions we can come up with if we can simulate flavor."

Despite this proposed poetry of transmitted taste, it's easy to see the consequences of virtual flavor as dystopian: horror-movie footage comes to mind, with ignorant humans eating undifferentiated gray mush that looks disgusting but is supposed to taste like the finest steak. Yet whether it's home-cooked food, pill, or flavor-inducing mush, we're likely to use new technology to continue to share what makes food fundamentally enjoyable beyond sheer nutrition—its communal possibilities.

When friends Instagram their brunch, you won't be limited to just looking at it any more. You can taste it.

