

Mini-capsule technology controls mosquitoes without insecticides

Effective mosquito control without the use of insecticides can now be achieved by soaking an egg-filled mini capsule in water, thanks to new technology developed by [Oxitec Ltd](#). The United Kingdom-based company, which develops targeted biological solutions to control insects that transmit diseases and destroy crops, has just completed a trial of its mini-capsule technology. The research, conducted in close partnership with the City of Indaiatuba, Brazil, found the method successfully suppressed 95 percent of the *Aedes aegypti* mosquito population in the targeted urban environment following just 13 weeks of treatment. “We are facing a devastating dengue epidemic in Brazil and new vector control tools are desperately needed for cities and communities alike,” said Natalia Ferreira, Oxitec Brazil’s director. “That’s why this ‘Friendly’ mini-capsule product is going to be so impactful — it can establish superior *Aedes aegypti* control safely with the easy deployment of tiny capsules in boxes that don’t require costly infrastructure or complex operations. We’re making it simple, sustainable, and scalable. In other words, this is exactly what Brazil’s cities and communities need at this critical time.”

The World Health Organization (WHO) estimates there are 390 million dengue infections per year, with approximately half of the world’s population at risk. The number of dengue cases reported to the WHO has increased more than 15-fold during the past two decades. *Aedes aegypti* is an invasive species of mosquitoes that transmits diseases like malaria, Zika, dengue and yellow fever.

The mini-capsule technology works by using a proprietary system that Oxitec developed to hold the eggs of its non-biting, self-limiting *Aedes aegypti* males. When placed in a small box of water, the capsule releases the males, which then disperse to mate with wild-type female *Aedes aegypti* in an area of up to two or more acres. Because the males contain a self-limiting gene, the offspring they produce do not live to maturity, thus naturally suppressing the population.

The Indaiatuba trial was conducted by placing the mini-capsule products in residential properties once per week, resulting in rapid suppression over an area of approximately 1,000 people. The trial demonstrated 100 percent effectiveness of the female larvae-killing feature while validating its full biosafety. Oxitec also commissioned independent research that found 94 percent of the 1,200 Indaiatuba residents surveyed supported the technology and its use in their neighborhoods.

“This trial was ground-breaking,” said Oxitec CEO Grey Frandsen in a press statement. “To start fighting back against the expansion of *Aedes aegypti*-transmitted diseases, we need an entirely new generation of economically accessible vector control tools that can empower a broader coalition to participate in the fight. As we’ve successfully demonstrated in this trial, our ‘Friendly’ mini-capsule approach is just that. This trial exceeded our performance targets and we’re now preparing for our next larger field trials.”

Earlier this month, the U.S. Environmental Protection Agency (EPA) granted Oxitec an Experimental Use Permit (EUP) for piloting this same technology in the United States.

The mini capsule is being developed to be the first insect-based *Aedes aegypti* technology that can be manufactured in centralized facilities around the world and then shipped, stored and deployed on demand anywhere, without the need for expert staff or special equipment or tools for handling.

It is intended to be a cost-effective, customizable approach to successfully controlling the disease-carrying mosquitoes in a range of environments “further unlocking the benefits of biological public health solutions for governments, communities and other end-users of all types and income levels,” according to the press statement.

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