

Microbide embraces data sharing in Zika fight

March 24 2016

Microbide Limited, an Irish clean technologies company, has signed up to the global Statement on Data Sharing in Public Health Emergencies and today published its studies demonstrating the larviciding capability against *Aedes aegypti* and *Anopheles* mosquitoes using a number of the company's biodegradable antimicrobial formulations.

The studies were conducted by the South African Bureau of Standards Entomology Laboratory, in Johannesburg, South Africa. They demonstrated the ability of Microbide's patented technology to kill immature stages of two varieties of mosquito; *Aedes aegypti* and

Anopheles arabiensis. In some cases with a complete kill of the larvae and pupae in dilutions of 2,000-4,000 to 1.

Further testing is planned to compare the results between different Microbide formulations in real life field conditions using bucket trials in the mosquito's natural environment.

Microbide achieved this using biodegradable anti-microbial formulations at a neutral pH. Equally of interest is the fact that two types of mosquito were studied: the *Anopheles arabiensis*, the vector generally associated with the Malaria plasmodium; and the *Aedes aegypti* mosquito, which is the viral vector of Yellow fever, Dengue Fever and Zika Virus, among others. The non-specific killing of immature mosquitoes of both genera suggests a real opportunity to address the over population of mosquitoes in areas of human and food stuff animal concentrations. This is done

through the larviciding of water habitats as part of an overall integrated vector control, sanitation and hygiene system.

As of January 2016, there are an estimated 1.6 million cases worldwide of the mosquito-born virus, Zika. Microbide is joining organisations including the Bill and Melinda Gates Foundation, Médecins Sans Frontières, the US National Institute of Health and the Wellcome Trust in making their urgently needed data public.

Without a vaccine or treatment, the hunt for control strategies has become a priority. Larvicides used in breeding areas are one of the most promising means of reducing an adult mosquito population. Larvicides target mosquitoes early in life, before they become adults and start spreading infection.

But many existing larvicides are toxic. In addition to killing mosquitoes, they can kill other animals and plants, and some even pose a threat to human health. With little else to choose from, however, authorities have continued to use larvicides. Reverting to the highly toxic DDT has even been suggested to contain the Zika outbreak.

Now, Microbide has under development a novel larvicide formulation that is both biodegradable and environmentally friendly. The product has a low environmental impact, breaking down into CO₂ and water after use, and has no effect on larger organisms, such as fish, plants and even adult [mosquitoes](#). "If we were to get approval as an insecticide, we would be the sixth and only biodegradable chemical on the market for that purpose," says Mary Skelly, Microbide's CEO.

In the lab, the Microbide solution exceeded expectations. It killed the immature forms—eggs, larvae and pupae—of *Anopheles arabiensis*, one of the mosquito carriers of malaria, and *Aedes aegypti*, the major culprit in Zika, Dengue and Yellow Fever transmission. "In some cases, the

concentration was as low as one in 4,000 (equivalent to 25 parts per million). Yet, it still managed to kill 100% of the mosquito larvae," explains Skelly.

The patented Microbide technology is based on micelles: the tiny lipid spheres that form when oil hits water. These micelles encapsulate and stabilise volatile chemicals called aldehydes, known for their antimicrobial properties. When the product is sprayed, the aldehydes are released to begin attacking the mosquito larvae.

The micellized aldehydes, when used as hospital cleaning agents, have outperformed market leaders in head-to-head studies, according to Skelly, who says they also offer major benefits over other mosquito control options.

Provided by SciencePOD

Citation: Microbide embraces data sharing in Zika fight (2016, March 24) retrieved 9 April 2024 from <https://medicalxpress.com/news/2016-03-microbide-embraces-zika.html>

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