

DRDO's Dengue Killer gets new lease of life

Formulation that attracts dengue-causing mosquitoes to breed in pre-planned locations, is being revalidated and registered before a central regulatory body

Scientists of the Defence Research & Development Organisation (DRDO) are reworking a dengue-busting formulation, which has faced research hurdles, so that it can be put to good use to prevent the disease.

The formulation, called 'mosquitocidal trap', was stopped from being used by the Central Insecticides Board & Registration Committee (CIBRC) for want of further data to validate the product for its efficacy in India.

However, a series of tests conducted by DRDO in Delhi Municipal Corporation limits between 2008 and 2010 were found to be not only successful but also environment-friendly.

The technology was transferred to a Mumbai-based company which exported it to partnering companies in Brazil and Mexico, which are independently validating the product there.

Scientists from Defence Research Laboratory (DRL) and Defence Research & Development Establishment (DRDE) had jointly developed the lure-and-kill formulation way back in 2005-06. The mosquitocidal trap was chemically designed to attract female *Aedes aegypti* and *Aedes albopictus* mosquitoes (the ones spreading dengue through their bites) to lay eggs in predetermined stagnant waters. These eggs hatch into larvae, but the insecticidal component of the formulation instantly destroys the larvae.

To achieve this, the DRL and DRDE scientists replicated the natural pheromones emitted by the female mosquitoes which send signals to subsequent egg-laying females to settle in those waters to lay their eggs. Pheromones are chemical substances naturally produced and released into the environment by mammals or insects to allow others of its species to do the same things earlier done by them.

The formulation is used through a paint spray can-like container, which costs just Rs 100 per unit. It can be easily handled by the common man to spray the content into stagnant waters and then wait for the female mosquitoes to arrive and lay eggs there.

The advantage of this technology is that one can actually choose where the female mosquitoes can lay eggs (as long as still water exists), lure them there, and then ensure the destruction of the larvae.

In January 2015, the then DRL director, Dr Vijay Veer had confirmed to Bangalore Mirror that the Mumbai-based company, Alkyl Amines, had this technology (through transfer of technology from DRDO) "and got CIBRC permission to export. (But) CIBRC permission for use in India is not available."

When CIBRC demanded more validation of the formulation, the DRDO scientists were stumped. Sources in DRDO told Bangalore Mirror that delivering the data as asked by CIBRC would run up to "crores of rupees" in costs as the studies, researches and field trials to be conducted could take several more years to prove its efficacy. Last year, DRL and DRDE scientists that this paper spoke to had said there were problems of funding which came in the way of carrying out the entire gamut of the revalidation process.

But with Central funds in place now, thanks to the Directorate General of Life Sciences in Delhi, the scientists are revalidating and registering the formulation with the CIBRC to attest its efficacy.

Scientists claim that this formulation has "incredible potential" in eliminating the occurrence of dengue causing mosquitoes, in turn preventing the disease.

They consider this significant considering that a study, Economic and disease burden of Dengue in India, published in American Journal of Tropical Medicine and Hygiene has pointed to dengue figures in the country being underestimated. The study found that the annual average number of dengue cases in India was 57,78,406 as against 20,474 cases given put out by India's National Vector Borne Disease Control Programme – 282 times the official figure.

The study also fixed India's dengue burden at \$1.1 billion per year from the medical costs as well as the income-per-man-lost due to the disease.

What's Buzzing

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Science behind it

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