

Everything under control – Effects of combining an insect-specific virus and an insecticide in mosquito larvae to control mosquito populations

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The risk of disease outbreaks caused by mosquito-borne arboviral infections is becoming increasingly problematic, even in so far temperate regions. This is due to climate change, globalization, and urbanization, which favour the spread of vectors and the pathogens they transmit. Vaccination or medical treatment is often not possible for arboviral diseases, making vector control essential for effective disease control. The unrestricted use of chlorinated insecticides (notably DDT) in the era of malaria control not only led to the development of resistance in vectors, but also had dramatic effects on human and animal health and severely damaged the environment. A modern approach is a more species-specific vector control by using entomopathogenic microorganisms and their active compounds. In our study, we targeted larvae of *Culex pipiens molestus* with the insect-specific virus Culex Y virus (CYV) in combination with an insecticide. CYV replicates in mosquitoes and specifically in their larvae, but not in ecologically important insects. We tested CYV-injected mosquito larvae and the progeny of infected mosquitoes with the insecticide spinosad at three different concentrations. Preliminary results suggest that offspring of CYV-infected mosquitoes exposed to spinosad had lower survival rates than the control group. The results could serve as a basis for developing integrated pest management strategies that combine biological control with reduced use of synthetic insecticides.

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