Effect of Yeast Diversity on Mosquito Populations

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Mosquitoes are the main transmitter of pathogens including: Urban Yellow Fever, West Nile, and Zika viruses. Due to rising temperatures, these diseases, once confined to tropical climates, have expanded to regions with milder climates. Habitats of mosquitoes often contain microorganisms such as yeasts. Most research involving microorganisms involves bacteria, but the effects of yeasts on mosquitoes is largely unknown. Genera such as Cystofilobasidium, Meyerozyma, Rhodotorula, Guehomyces, and Kazachstania have been found to be associated with mosquito larva. The purpose of this scientific investigation is to evaluate the potential function of fungi found in water on mosquito growth and development. Mosquitoes were exposed to colored and white strains of yeast, and growth was measured and compared to the control, mosquitoes exposed to oak leaf tea. After collecting data in the field and conducting three trials in the lab, it was determined that mosquitoes exposed to a white strains of Meyerozyma yeast had a higher rate of hatching and larval growth than those exposed to a colored strain. Meyerozyma (red) showed the lowest oviposition with only 39 eggs, as well as the lowest rate of larval growth and development (18%). Meyerozyma (white) had a high percentage of egg hatching (63%), but had a low cell viability (33%), which suggests that spore concentration also affects growth and development. This preliminary data suggests that repeated testing is needed to determine the significance of this yeast on mosquitoes.

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