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Did Food Dye Prevent Human Malaria from Infecting Mosquitoes? Clara C. Tucker¹, Justine C. Shiau², Ashutosh K Pathak², Courtney C. Murdock²



An outside lab attempted to infect their two species of mosquitoes, Anopheles stephensi and Anopheles gambiae with the human malaria parasite, *Plasmodium falciparum*, from our lab With our mosquitoes as controls, we found that malaria failed to infect any of the outside lab's mosquitoes. We wanted to know why.

Hypotheses

- 1. The outside lab has malaria resistant mosquitoes
- 2. Something about the way the outside lab raises their mosquitoes protects them from malaria infection

The outside lab fed their mosquitoes fructose and water with blue and green food dyes before the infection. Since some dyes have antimalarial properties, such as Methylene Blue, we tested the effect of McCormick's Food Dye on malaria transmission in An. stephensi.

Research Questions

Can food dye block malaria transmission to mosquitoes?

- Does the timing of dye consumption affect the potential blocking effect (before or after infection)?
- Do different concentrations of food dye affect the potential blocking effect?
- Is food dye toxic to mosquitoes?

Why do we care?

The majority of antimalarials target the parasite in humans and have unpleasant side effects. Targeting malaria in mosquitoes could decrease the number of humans contracting the disease altogether. Food dye would be a cheap and easy solution.

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Infection Results



Neither green nor blue food dye significantly affected malaria transmission or mortality rates at any concentration, meaning that something else is blocking transmission.



Survival Results

- If the mosquitoes contract malaria, then an environmental condition blocked transmission, revealing a potential mosquito-targeted antimalarial.
- If the mosquitoes do not contract malaria, then we can investigate the genetics of the two species to look for malariaresistant genes.



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Our Next Experiment

- We can raise outside lab's mosquitoes in the Murdock lab to control for all environmental conditions.