Researchers at Johns Hopkins University have recently suggested that mosquitos’ brains mix tastes with smells in a specialized area, to make preferred flavors. Through these findings, they may be able to discover a particular substance that makes human flavor repulsive for malaria-bearing types of mosquitos; this may help to prevent them from spreading the disease to humans, which may potentially save about 450,000 lives per year (Potter).

Malaria is an infectious parasite disease that is transmitted by the bite of the female *Anopheles gambiae* mosquito. In just the year of 2015, this disease affected 214 million people, due to the unfortunate fact that there is no malaria vaccine. If caught in early stages, it is curable, however afterwards, symptoms can only be managed at a costly price.

“All mosquitoes, including the one that transmits malaria, use their sense of smell to find a host for a blood meal. Our goal is to let the mosquitoes tell us what smells they find repulsive and use those to keep them from biting us,” (Potter)

The sense of smell is crucial to a mosquito’s survival, therefore, they have three pairs of “noses” for sensing odors: two antennae, two maxillary palps and two labella (Potter). Potter’s team used a genetic technique (made certain neurons that receive complex odors turn green to be distinguishable, used first time in mosquitos) to see where olfactory neurons from those regions enter the brain.

As expected, Potter says, “the OR neurons from the antennae and maxillary palps went to symmetrical areas of the brain called antennal lobes, just as they do in flies.” However, OR neurons from the labella went to the subesophageal zone, which has been associated with the sense of taste, suggesting that mosquitos like a combination of our smell and flavor.

Therefore, a combination of repellants could potentially prevent mosquitos carrying malaria from biting humans. “One could target the antennal neurons and reduce the likelihood that they come too close, while another could target the labellar neurons and make the mosquitoes turn away in disgust — before sucking our blood — if they got close enough to land on us” (Potter). Through this method, researchers would like to discover a safe odorant for us, that has the ability to strongly repel mosquitos at low concentrations.

Bibliography

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