Protein plays key role in transmitting deadly malaria parasite

May 28 2008

The protein MAEBL is critical for completing the life cycle of malaria parasites in mosquitoes, allowing the insects to transmit the potentially deadly infection to humans, a University of South Florida study has shown. The research may ultimately help provide a way to better control malaria by blocking development of the malaria parasite in the mosquito.

Researchers with the USF Global Health Infectious Diseases Research team found that the transmembrane protein MAEBL is required for the infective stage of the malaria parasite Plasmodium falciparum to invade the mosquito's salivary glands. Their findings were published May 28 in the online journal PLoS ONE.

"The mosquito is the messenger of death," said the study's principal investigator John Adams, PhD, professor of global health at the USF College of Public Health. "If we could eliminate the parasite from the mosquito, people wouldn't become infected."

Plasmodium falciparum causes three-quarters of all malaria cases in Africa, and 95 percent of malaria deaths worldwide. It is transmitted to humans by the bite of an infected mosquito, which injects the worm-like, one-celled malaria parasites from its salivary glands into the person's bloodstream.

The study was done by genetically modifying the malaria parasites and feeding them in a blood meal to uninfected mosquitoes. Parasites in which MAEBL was deleted were not harbored in the salivary glands of

mosquitoes, even though an earlier form of these parasites was observed in the gut of the mosquitoes. The researchers concluded that the transmembrane form of MAEBL is essential for the parasite to enter the mosquito's salivary glands.

While more studies are needed, lead author Fabian Saenz, PhD, said the finding suggests that silencing the receptor for MAEBL in the mosquito salivary gland might block passage of the parasite through the mosquito, thereby preventing human infection through mosquito bites.

"Our study shows that MAEBL is a weak link in the parasite's biology," Dr. Adams said. "This could provide a potential way to block transmission in the mosquito, before the parasite ever has a chance to infect a new person. It is better to prevent the malaria infection from occurring in the first place than having to kill the parasite already inside humans with vaccines or drugs."

Source: University of South Florida Health

Citation: Protein plays key role in transmitting deadly malaria parasite (2008, May 28) retrieved 16 April 2024 from https://phys.org/news/2008-05-protein-key-role-transmitting-deadly.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.