Yale Nobel laureate creates compound that halts growth of malaria parasite

Yale UniversityYale University

A drug candidate that has shown promise for neutralizing dangerous bacteria also prevents the parasite that causes malaria from growing, new research by a Yale University team headed by Nobel laureate Sidney Altman shows.

The compound created in the labs of Altman and co-senior author Choukri Ben Mamoun at the Yale School of Medicine penetrates red blood cells and targets molecular machinery that enables the parasite to grow within the cells, according to findings published the week of April 2 in the Proceedings of the National Academy of Sciences.

Malaria sickens more than 200 million people and kills more than a million people annually. The disease is caused by fives species of parasites of the genus *Plasmodium,* which is transmitted to humans by mosquitoes.

While we primarily looked at one species of parasite, it is clear the compound also knocks out drug-resistant strains of malaria as well, Altman said. This compound can wipe out strains that are currently resistant to drugs such as chloroquine and pyrimethamine.

The work is an outgrowth of the discovery by Yale immunobiology professor Alfred L. M. Bothwell of a basic peptide that the Yale team showed can penetrate cell walls and membranes. Altman and colleagues also added a piece of RNA to this peptide which then attaches to messenger RNA produced by parasites within the blood cells. The presence of this complex activates a molecular response that disables the parasite.

Altmans lab has already shown this compound can kill dangerous strains of bacteria and is currently investigating its efficacy in combating infections in skin wounds. The current paper illustrates the compounds effectiveness in red blood cell tissue culture. Altman stressed that more tests must be conducted to make sure the compound works in animals and people as well.

It will be some time before this is commercially available, Altman said.

Altman was awarded the Nobel Prize in Chemistry in 1989 along with Thomas R. Cech for their discoveries of the catalytic properties of RNA.

Other Yale authors of the study are Yoann Augagneur, Donna Wesolowski and Hyun Seop Tae.

The National Institutes of Health and Burroughs Wellcome Fund were the primary

funding sources for the study.

Bill Hathaway

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