

New single-dose antimalaria compound is effective in mice and resistance resistant

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A large international team of researchers has found a small molecule compound that has proven to be effective in treating malaria in mice. In their paper published in the journal *Science Translational Medicine*, the

group notes that testing thus far shows that the parasite behind malarial infections (*Plasmodium falciparum*) also has difficulty in developing resistance to the compound.

As the researchers on this new effort note, prior work by many groups around the world led to a dramatic drop in both infections and deaths from malaria over the years 2000 to 2015, But since 2016, the infection rate has plateaued as the [parasites](#) that cause malaria have developed resistance to the drugs developed to kill them. This has led researchers to consider antimalarials that kill the parasite through other mechanisms.

In this new effort, the researchers took a different approach from the usual screening method. Instead, they began their search by focusing on a small number of compounds that are currently produced by drugmakers. More specifically, they began by looking at 800 compounds made by French pharmaceutical company Sanofi that are known to work against human targets, such as cells in cancerous tumors. Such an approach was chosen, they note, because they assumed that one or more of the [compounds](#) might target cells needed by malaria parasites.

The researchers then undertook an exhaustive screening process that involved exposing the malaria parasite to each compound they had included in the study and watching to see if it would be killed. Their effort paid off. They found a compound called MMV688533 that killed the parasite. They then modified the compound to make it more soluble and to help it get into the [intestinal tract](#) when introduced as a single-dose pill.

In testing the compound, the researchers found it effective in treating malaria in mice with one single oral dose, fast acting, and effective at killing *P. falciparum*. Further testing that involved giving infected mice doses multiple times over an extended period showed that the parasite had difficulty in developing resistance to the compound—and when it

finally did, a higher dose killed it anyway.

More testing of the compound will need to be done to prove the compound safe for general use against [malaria](#). It is currently being tested in a Phase 1 clinical trial in Australia.

More information: James M. Murithi et al, The antimalarial MMV688533 provides potential for single-dose cures with a high barrier to Plasmodium falciparum parasite resistance, *Science Translational Medicine* (2021). [DOI: 10.1126/scitranslmed.abg6013](https://doi.org/10.1126/scitranslmed.abg6013)

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