

New opportunity for rapid treatment of malaria

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(Medical Xpress)—Researchers have identified a new means to eradicate malaria infections by rapidly killing the blood-borne *Plasmodium* parasites that cause the disease.

[Malaria](#) causes up to 3 million deaths each year, predominantly afflicting vulnerable people such as children under five and pregnant women, in tropical regions of Africa, Asia, and Latin America. Treatments are available for this disease, but the *Plasmodium* parasite is fast becoming resistant to the most common drugs, and [health authorities](#) say they desperately need new strategies to tackle the disease.

This new potential treatment uses molecules that interfere with an important stage of the parasite's growth cycle and harnesses this effect to kill them. The impact is so acute it kills ninety per cent of the parasites in just three hours and all those tested in laboratory samples of infected human blood cells, within twelve hours.

The research was carried out by chemists at Imperial College London and biological scientists from the [research institutions](#) Institut Pasteur and CNRS in France. Their work is published in the journal [Proceedings of the National Academy of Sciences](#).

Lead researcher Dr Matthew Fuchter, from Imperial College London, said: "*Plasmodium falciparum* causes 90 per cent of malaria deaths, and its ability to resist current therapies is spreading dramatically. Whilst many new drugs are in development, a significant proportion are minor

alterations, working in the same way as current ones and therefore may only be effective in the short term. We believe we may have identified the parasite's 'Achilles' Heel', using a molecule that disrupts many vital processes for its survival and development."

The research has identified two [chemical compounds](#) that affect *Plasmodium falciparum*'s ability to carry out transcription, the key process that translates genetic code into proteins. These compounds are able to kill the parasite during the long period of its complex life cycle while it inhabits the blood-stream. This is in contrast to the majority of antimalarial drugs, whose action is limited to shorter stages of *Plasmodium*'s life cycle.

"One particularly exciting aspect of this discovery is this new molecule's ability to rapidly kill off all traces of the parasite, acting at least as fast as the best currently available antimalarial drug," said Dr Fuchter.

Initial tests also showed the molecules were able to kill strains of *Plasmodium* that have developed a resistance to current treatments, although the scientists say more experiments are needed to confirm these results.

The scientists hope to refine these molecules, improving their effectiveness and proving this to be a viable strategy for treating malaria in humans. They hope it will lead to the development of an effective malaria cure within the next ten years.

More information: *Proceedings of the National Academy of Sciences*
www.pnas.org/content/109/41/16708.abstract

Provided by Imperial College London

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