



Press Release

Promising malaria vaccine tested

New combination of drugs proves effective and well-tolerated – Further studies planned

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An international research team has conducted successful phase II clinical tests of a new anti-malaria medication. The treatment led to a cure in 83 cases. The new combination of drugs was developed by Professor Peter Kremsner of the Tübingen Institute of Tropical Medicine and the company DMG Deutschen Malaria GmbH. The study was recently published in *Clinical Infectious Diseases* and is freely accessible.

In the study, the researchers tested the efficacy, tolerability and safety of a combination of the drugs Fosmidomycin and Piperaquine. The twofold medication was administered for three days to patients aged one to thirty who were infected with malaria via the *Plasmodium falciparum* pathogen. In the 83 evaluable cases, there was a 100% cure rate. Patients tolerated the treatment well, and it led to a swift reduction of clinical symptoms. Safety issues were limited to changes in electrocardiogram readings, as had been described for Piperaquine.

The study was conducted at the Centre de Recherches Médicales de Lambaréné (CERMEL) in the African country of Gabon; CERMEL has close ties with the University of Tübingen. Financial support came from the nonprofit organisation Medicines for Malaria Venture (MMV).

“This study represents a milestone in the clinical research into Fosmidomycin,” says Tübingen Professor of Tropical Medicine Peter Kremsner. The substance was originally extracted from *Streptomyces lavendulae* and today can be produced synthetically. It blocks a metabolic pathway for the production of Isoprenoid in the malaria pathogen. This makes the malaria pathogen unable to metabolize or reproduce. Because Isoprenoids are formed via a different synthesis path in the human body, humans have no target structures for Fosmidomycin. For this reason humans tolerate the drug well and suffer barely any side effects. In addition, this unique mechanism excludes the possibility of cross-resistance to the drugs used in earlier malaria treatments.

The new combination meets WHO guidelines for combination therapies. The two drugs mechanisms against differing target structures means that

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they attack the parasite in the bloodstream independently of one another. This meets WHO requirements for a fast and effective treatment of the acute phase of infection, and for protection against relapse due to reappearance of the infection. The researchers say the effective mechanism helps to delay the formation of a possible resistance. Further studies are in planning to optimize dose.

Publication:

Ghyslain Mombo-Ngoma, Jonathan Remppis, Moritz Sievers, Rella Zoleko Manego, Lilian Endamne, Lumeka Kabwende, Luzia Veletzky, The Trong Nguyen, Mirjam Groger, Felix Lötsch, Johannes Mischlinger, Lena Flohr, Johanna Kim, Chiara Cattaneo, David Hutchinson, Stephan Duparc, Moehrle Joerg, Thirumalaisamy P Velavan, Bertrand Lell, Michael Ramharter, Ayola Akim Adegniko, Benjamin Mordmüller, Peter G Kremsner: Efficacy and safety of fosmidomycin-piperaquine as non-artemisinin-based combination therapy for uncomplicated falciparum malaria – A single-arm, age-de-escalation proof of concept study in Gabon, *Clinical Infectious Diseases*, <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/cix1122/4774674>

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The University of Tübingen

The University of Tübingen is one of eleven universities given the title of excellent under the German government's Excellence Initiative. In the life sciences we conduct world-class research in neuroscience, translational immunology and cancer research, microbiology and infection research, and molecular biology. Further areas of core research are in geoscience and environmental science; archaeology and anthropology; language and cognition; and education and the media. More than 28,000 students from Germany and around the world are currently enrolled at the University of Tübingen, enjoying a broad spectrum of some 300 different study programs.

DMG Deutsche Malaria GmbH

DMG Deutsche Malaria GmbH is involved in the battle against malaria. Our goal is to beat back malaria zurückzudrängen. We use Fosmidomycin both to raise the efficacy of existing treatments as well as to develop new, alternative treatments for the disease. A private Hamburg-based company, we have conducted intense research and development work which has led to the successful use of the Fosmidomycin-Piperaquine combination treatment in clinical studies in Africa. We welcome partners who would like to support us in further development and faster movement through the next steps in the program to get treatment options for malaria onto the market.