

Title:

Methylene blue for therapy of malaria

PI:

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Funding:

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Description:

Methylene blue (MB) is a water-soluble dye which was developed by the German firm BASF in the year 1876. It is used for a long time in industry and medicine.

Successful treatment of malaria with MB has first been reported by Paul Ehrlich in 1893. MB was then used for many decades in the treatment of malaria, in particular for quinine-refractory cases, but the detailed effects were poorly documented. The interest in MB as an antimalarial drug was reactivated when scientists from Heidelberg identified the *P. falciparum* glutathione reductase as a new drug target.

In a series of clinical studies conducted in Burkina Faso, oral MB (4-24 mg/kg/day) was shown to be safe and effective in the treatment of uncomplicated falciparum malaria when combined with other antimalarials, but to act slower against asexual parasites than artemisinin.

Nevertheless, MB has shown a strong effect in terms of *P. falciparum* gametocyte reduction in vivo as well as potential synergy with artemisinin drugs in vitro, matching pharmacokinetics and a low potential for resistance development. Consequently, MB has been considered a potentially useful partner drug for existing ACTs, particularly in regions where malaria elimination is the final goal.

The project is currently further characterizing the effects of MB in patients with falciparum malaria in West Africa (Mali and Burkina Faso). Moreover, a pilot study is planned to investigate the effects of MB on vivax malaria in East Africa (Ethiopia).

Time frame:

Ongoing

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