

# Natural compounds: the future of anti-malarial treatment

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In the run up to World Malaria Day on the 25th April 2011, BioMed Central's open access journal *Malaria Journal* takes a long hard look at the development of natural compounds for use in the fight against malaria.

There are over 200 million cases of [malaria](#) each year with 85% of all cases being children under five years old and, according to the World Health Organisation, in 2009 malaria was responsible for 781,000 deaths worldwide. Low cost treatment is available, 100 million children a year are treated with Artemisinin combination therapy at a cost of about 30 cents per child, but resistance of the parasite to this treatment is increasing. In the face of this resistance, researchers are turning to traditional medicine to provide a starting point for the development of [new drugs](#).

Traditional remedies are widely used especially in areas of poverty or where there is no access to medical treatment. The combination of artemisinin, flavanoids, and other compounds which occur naturally in the leaves of *Artemisia annua*, increases the effectiveness of the treatment and decreases metabolism of the active ingredient. Curcumin (from turmeric) has anti-malarial properties and is being tested for use against [cerebral malaria](#). Adding piperine (from black pepper seeds) to curcumin increases the effectiveness of curcumin 2000 times. Plant extracts such as lemon eucalyptus, citronella, and neem oil also have use as insect repellents but are not as yet recommended for use by the [Environmental Protection Agency](#).

Researchers suggest following the Research Initiative on Traditional Anti-Malarial Methods (RITAM), which shows a consensus of observational and laboratory results with clinical clearance of parasites. They also advocate the inclusion of native healers for the review of disease surveillance, ethnobotanical treatments, and changes in health care policy to increase the validity of these traditional medicines.

However, there is currently no concerted research into the effectiveness of [natural compounds](#) as anti-malarials or as malaria prophylaxis. Consequently, there is a need for partnership organisations, such as African Network for Drugs and Diagnostics Innovation (ANDi), to promote standardisation in observing traditional remedies and the subsequent pharmacological purification and testing of compounds and combinations in the clinic.

**More information:** 1.1. A call for using natural compounds in the development of new antimalarial treatments– an introduction  
Hagai Ginsburg and Eric Deharo  
Malaria Journal (in Press)

1.2. How can natural products serve as a viable source of lead compounds for the development of new/novel anti-malarials?  
Eric Guantai and Kelly Chibale  
Malaria Journal (in Press)

1.3. Natural products as starting points for future anti-malarial therapies: going back to our roots?  
Timothy NC Wells  
Malaria Journal (in Press)

1.4. Whole plant extracts versus single compounds for the treatment of malaria: synergy and positive interactions  
Philippe Rasoanaivo, Colin W Wright, Merlin L Willcox and Ben

Gilbert

Malaria Journal (in Press)

1.5. Analysis of additivity and synergism in the anti-plasmodial effect of purified compounds from plant extracts

Eric Deharo and Hagai Ginsburg

Malaria Journal (in Press)

1.6. To what extent can traditional medicine contribute a complementary or alternative solution to malaria control programmes?

Bertrand Graz, Andrew Y Kitua and Hamisi M Malebo

Malaria Journal (in Press)

1.7. Do ethnobotanical and laboratory data predict clinical safety and efficacy of anti-malarial plants?

Merlin Willcox, Françoise Benoit-Vical, Dennis Fowler, Geneviève Bourdy, Gemma Burford, Sergio Giani, Rocky Graziose, Peter Houghton, Milijaona Randrianarivelojosia and Philippe Rasoanaivo

Malaria Journal (in Press)

1.8. A "reverse pharmacology" approach for developing an anti-malarial phytomedicine

Merlin L Willcox, Bertrand Graz, Jacques Falquet, Chiaka Diakite, Sergio Giani and Drissa Diallo

Malaria Journal (in Press)

1.9. Traditional medicines as a mechanism for driving research innovation in Africa

Ivan Addae-Mensah, Foluke Fakorede, Andreas Holtel and Solomon Nwaka

Malaria Journal (in Press)

1.10. The plant-based immunomodulator curcumin as a potential

candidate for the development of an adjunctive therapy for cerebral malaria

Patrice N Mimche, Donatella Taramelli and Livia Vivas  
Malaria Journal (in Press)

1.11. Plant-based insect repellents: a review of their efficacy, development and testing

Marta Ferreira Maia and Sarah J Moore  
Malaria Journal (in Press)

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