

# Toxicology, Clinical Toxicology & Pharmacology & 6<sup>th</sup> International Conference on Recycling & Waste Management

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## Garlic as an antimalarial drug in Artemisinin Combination Therapy

**Vathsala P G**

Indian Institute of Science, India

**G**arlic (*Allium sativum*) is one of the popular herbal medicines used worldwide to reduce various risk factors associated with several diseases. Garlic contains a variety of effective compounds that exhibit anticoagulant, antioxidant, antibiotic, hypocholesterolaemic and hypoglycaemic as well as hypotensive activities. To evaluate antimalarial activity of garlic pearl oil and artemisinin in combination therapy, Commercially available  $\alpha$ - $\beta$  Arteether (E MALTM) and Garlic pearl oil (Ranbaxy Laboratories Ltd., New Delhi, India) were tested for its antimalarial activity in *Plasmodium berghei*-infected mouse model. This study demonstrates, for the first time, the in vivo antimalarial activity of arteether and garlic pearl either as individual molecules or in combination at various dosage levels in *Plasmodium berghei*-infected mouse model of malaria. After 72 h (Day 3) when the parasitemia was about 2-4%, infected mice were treated with single dose intramuscular injection of 750  $\mu$ g of arteether in combination with three 100  $\mu$ L oral doses of garlic pearl on Day 3, Day 4 and Day 5 and showed 100% protection against malaria. Giemsa stained blood pictures show inhibition of parasitemia in combination drug treated

animals and the protection during recrudescence interval in arteether monotherapy. This approach shows that arteether and garlic pearl oil combination therapy gives complete protection in *P. berghei*-infected mice. Arteether and garlic combination therapy resulted in a striking increase in anti-parasite antibody IgG contributing protective immunity during the recrudescence phase. These results are also matching with Western Blot analysis, where sera from the recrudescence stage and later period of AE+garlic treated animals interacted with several parasite specific proteins, compared to the controls. There is potential to decrease the dose of artemisinin and in developing low-cost antimalarial drug therapies and for the first time garlic appears to be an ideal antimalarial molecule especially for use in artemisinin combination therapy.

### Speaker Biography

Vathsala P G has been working on combination therapy for malaria for more than two decades and completed her PhD from Indian Institute of Science. She is currently serving in Biology Division of Undergraduate Programme along with research activity. She has published 10 papers in reputed journals on antimalarial drugs

e: vats@iisc.ac.in



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