Mefloquine

Class:
Mefloquine is a chiral quinoline methanol.

Antiparasitic Activity:
Mefloquine is active against asexual forms of the four species of *Plasmodium* that infect humans.
It has some activity against the sexual forms (gametocytes) of *P. vivax, malariae* and *ovale*.
It is ineffective against gametocytes of *P. falciparum* and exoerythrocytic liver forms of *Plasmodium* species

Mechanism of Action:
Membrane-bound mefloquine may inhibit merozoite invasion and interact with proteins involved with parasite membrane lipid trafficking and nutrient uptake.
Mefloquine binds to haem, forming a complex that may also be toxic to the parasite.

Mechanism of Resistance:
Mefloquine-resistant field isolates of *P. falciparum* do have increased amounts of the *pfmdr 1* gene and over-express the gene product suggesting that pgh-1 may be involved in mefloquine resistance.

Pharmacokinetics:
Mefloquine is poorly water-soluble but relatively highly bio-available. The terminal elimination $t_{½}$ is 14 to 28 days. Plasma protein binding is >98%.

Pregnancy:
While mefloquine is safe in pregnancy, there remain concerns over its use in the first trimester but this may be overstated.

Dosage:
Prophylaxis:
Doses ranging from 125 to 250 mg every 1 to 2 weeks have shown a protective efficacy against both falciparum and vivax malaria (>95%).

Treatment:
For non-immune patients receiving mefloquine as sole treatment for falciparum malaria, the usual adult curative treatment dose is 15-25 mg/kg body weight and in children 15 to 30 mg/kg.

Adverse Effects:
The most serious adverse effect of mefloquine treatment is neuropsychiatric toxicity and the symptoms can range from mild to life-threatening.
Serious reactions similar to those seen after treatment courses occur during prophylaxis at between 1 in 10,000 and 1 in 20,000 courses in large-scale studies.