TOPQUINE®

Composition
Each sugarcoated tablet contains: Quinine Sulphate BP 300 mg
Each 5 ml of the mixture contains Quinine (as Dihydrochloride) BP 50mg.
Each drop of the Drops solution contains Quinine (as dihydrochloride) BP 10 mg.

Pharmacology
Quinine is a cinchona alkaloid and a 4-methanolquinoline antimalarial that is a rapid-acting blood schizontocide with activity against *Plasmodium falciparum*, *P. vivax*, *P. ovale*, and *P. malariae*. It is active against the gametocytes of *P. malariae* and *P. vivax*, but not against mature gametocytes of *P. falciparum*.
The precise mechanism of action of quinine is unclear but it may interfere with lysosome function or nucleic acid synthesis in the malaria parasite. Since it has no activity against exoerythrocytic forms, quinine does not produce a radical cure in vivax or ovale malarias. Quinine intercalates into DNA, disrupting the parasite's replication and transcription; it also depresses oxygen uptake and carbohydrate metabolism in the malaria parasites. It accumulates in the acid food vacuoles of malaria parasites and inhibits the parasitic enzyme hemepolymerase. This enzyme allows the incorporation of heme, which is toxic to the parasite, into insoluble (and apparently inert) crystalline material called hemozin. In case of falciparum infections, the effects of quinine are largely confined to sequestered parasites.

Pharmacokinetics
The pharmacokinetics of quinine are altered significantly by malaria infection, the major effects being reductions in both its apparent volume of distribution and its clearance. Quinine is rapidly and almost completely absorbed from the gastrointestinal tract and peak concentrations in the circulation are attained about 1 to 3 hours after oral administration of the sulfate or bisulfate. Plasma protein binding is about 70% in healthy subjects and rises to 90% or more in patients with malaria. Quinine is widely distributed throughout the body. Concentrations attained in the CSF of patients with cerebral malaria have been reported to be about 2 to 7% of those in the plasma. Quinine is extensively metabolized in the liver and rapidly excreted mainly in the urine. Estimates of the proportion of unchanged quinine excreted in the urine vary from less than 5 to 20%. Excretion is increased in acid urine. The elimination half-life is about 11 hours in healthy subjects but may be prolonged in patients with malaria. Small amounts of quinine also appear in the bile and saliva. Quinine crosses the placenta and is distributed into breast milk

Indications
Quinine is a second line treatment medicine used in the treatment of severe and complicated falciparum malaria and falciparum malaria resistant to chloroquine and sulfadoxine/Pyrimethamine.Quinine is also used to treat the protozoal infection babesiosis.
Quinine has mild analgesic and antipyretic properties and is sometimes included in preparations used for the symptomatic relief of the common cold and influenza.

Dosage
All quinine salts may be given orally or intravenously (IV);
The recommended dose is given for 5 to 7 days.
The adult dose is 600 mg quinine dihydrochloride IV or 600 mg quinine sulfate orally every eight hours.
The dosage for children is 10mg/kg body weight.
Topquine mixture: - the dosage schedule is as in the table below.

Age group	Dose (To be given every 8 hrs)
1-3 months	50 mg (One 5ml spoonful)
4-11 months	100 mg (Two 5ml spoonfuls)
1-3 years	200 mg (Four 5ml spoonfuls)
4-6 years	300 mg (Six spoonfuls)

For those above 3 year who can swallow a tablet, they should be given one 300 mg tablet.
The paediatric drops are mainly for neonates below 10 kg. The recommended dose is one drop per kg body weight.

Adverse Effects
Quinine or its salts given in usual therapeutic doses may give rise to a train of symptoms known as cinchonism, characterised in its mild form by tinnitus, impaired hearing, headache, nausea, and disturbed vision, with, in its more severe manifestations, vomiting, abdominal pain, diarrhoea, and vertigo. Cinchonism may also occur after small doses in patients hypersensitive to quinine, but urticaria and flushing of the skin with intense pruritus are the most frequent reactions seen in these patients. Other effects include fever, skin rashes, and dyspnoea. Angioedema may also occur and asthma can be precipitated. Thrombocytopenia and other blood disorders have been reported. Thrombocytopenic purpura has been associated with quinine hypersensitivity. Haemoglobinuria occurs rarely. Other adverse effects of quinine include hypoglycaemia, hypoprothrombinaemia, and renal failure.
The main symptoms of overdosage, which can be fatal, include gastrointestinal effects, oculotoxicity, CNS disturbances, and cardiotoxicity. Visual disturbances including sudden blindness are usually slowly reversible but there may be residual damage. Quinine can produce cardiovascular toxicity similar to that seen with quinidine including conduction disturbances, arrhythmias, anginal symptoms and hypotension leading to cardiac arrest and circulatory failure. Severe or even fatal cardiovascular toxicity can result from rapid intravenous administration of quinine. Large amounts of quinine can induce abortion; congenital malformations, particularly of the optic and auditory nerves, have been reported after failure to induce abortion with quinine. However, quinine should not be withheld from pregnant women with life-threatening malaria. Intramuscular injections of quinine can be irritants and have caused pain, focal necrosis, and abscess formation; tetanus has developed in some patients.

Precautions
Quinine is contraindicated in pregnant patients and in patients with known hypersensitivity to the drug, optic neuritis, or tinnitus; and in patients with a history of blackwater fever or of thrombocytopenic purpura associated with previous quinine ingestion. Quinine should be used with caution in patients with cardiac arrhythmias and in those taking sodium bicarbonate concomitantly. Quinine must be used with considerable caution, if at all, in patients who manifest idiosyncrasy to it, especially when this takes the form of cutaneous, angioedematous, visual, or auditory symptoms. Quinine should be stopped immediately if evidence of hemolysis appears. The drug should not be employed in patients with tinnitus or optic neuritis.

Contraindications
Quinine sulphate is contraindicated in patients with hypersensitivity to quinine or other cinchona alkaloids. Therapeutic administration of mefloquine within the preceding 14 days is also a contraindication for use of quinine sulphate.

Storage Conditions
Should not be refrigerated. To be stored at below 30°C in a cool dry place away from humid conditions and direct light.
Keep medicines out of reach of children.

Presentation
Mixture in 60, 100 ml bottles.
Drops solution in 15 ml bottle with dropper.
HDPE containers with 1000 tablets.

Manufactured By

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