

**ARALEN®**  
**CHLOROQUINE**  
**PHOSPHATE,**  
**USP**

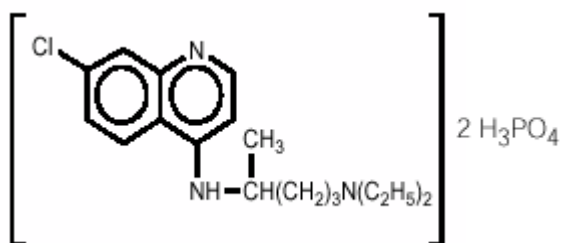
For Malaria and Extraintestinal Amebiasis

**DESCRIPTION**

ARALEN, chloroquine phosphate, USP, is a 4-aminoquinoline compound for oral administration. It is a white, odorless, bitter tasting, crystalline substance, freely soluble in water.

ARALEN is an antimalarial and amebicidal drug.

Chemically, it is 7-chloro-4-[[4-(diethylamino)-1-methylbutyl]amino] quinoline phosphate (1:2) and has the following structural formula:



Each tablet contains 500 mg of chloroquine phosphate USP, equivalent to 300 mg chloroquine base.

*Inactive Ingredients:* Carnauba Wax, Colloidal Silicon Dioxide, Dibasic Calcium Phosphate, Hydroxypropyl Methylcellulose, Magnesium Stearate, Microcrystalline Cellulose, Polyethylene Glycol, Polysorbate 80, Pregelatinized Starch, Sodium Starch Glycolate, Stearic Acid, Titanium Dioxide.

**CLINICAL PHARMACOLOGY**

Chloroquine is rapidly and almost completely absorbed from the gastrointestinal tract, and only a small proportion of the administered dose is found in the stools. Approximately 55% of the drug in the plasma is bound to nondiffusible plasma constituents. Excretion of chloroquine is quite slow, but is increased by acidification of the urine. Chloroquine is deposited in the tissues in considerable amounts. In animals, from 200 to 700 times the plasma concentration may be found in the liver, spleen, kidney, and lung; leukocytes also concentrates the drug. The brain and spinal cord, in contrast, contain only 10 to 30 times the amount present in plasma.

Chloroquine undergoes appreciable degradation in the body. The main metabolite is desethylchloroquine, which accounts for one fourth of the total material appearing in the urine; bisdesethylchloroquine, a carboxylic acid derivative, and other metabolic products as yet uncharacterized are found in small amounts. Slightly more than half of the urinary drug products can be accounted for as unchanged chloroquine.

## Microbiology

**Mechanism of Action:** Chloroquine is an antimalarial agent. While the drug can inhibit certain enzymes, its effect is believed to result, at least in part, from its interaction with DNA. However, the mechanism of plasmodicidal action of chloroquine is not completely certain.

**Activity *in vitro* and *in vivo*:** Chloroquine is active against the erythrocytic forms of *Plasmodium vivax*, *Plasmodium malariae*, and susceptible strains of *Plasmodium falciparum* (but not the gametocytes of *P. falciparum*). It is not effective against exoerythrocytic forms of the parasite.

*In vitro* studies with trophozoites of *Entamoeba histolytica* have demonstrated that chloroquine also possesses amebicidal activity comparable to that of emetine.

**Drug Resistance:** Resistance of *Plasmodium falciparum* to chloroquine is widespread and cases of *Plasmodium vivax* resistance have been reported.

## INDICATIONS AND USAGE

ARALEN is indicated for the suppressive treatment and for acute attacks of malaria due to *P. vivax*, *P. malariae*, *P. ovale*, and susceptible strains of *P. falciparum*. The drug is also indicated for the treatment of extraintestinal amebiasis.

ARALEN does not prevent relapses in patients with vivax or malariae malaria because it is not effective against exoerythrocytic forms of the parasite, nor will it prevent vivax or malariae infection when administered as a prophylactic. It is highly effective as a suppressive agent in patients with vivax or malariae malaria, in terminating acute attacks, and significantly lengthening the interval between treatment and relapse. In patients with falciparum malaria it abolishes the acute attack and effects complete cure of the infection, unless due to a resistant strain of *P. falciparum*.

## CONTRAINDICATIONS

Use of this drug is contraindicated in the presence of retinal or visual field changes either attributable to 4-aminoquinoline compounds or to any other etiology, and in patients with known hypersensitivity to 4-aminoquinoline compounds. However, in the treatment of acute attacks of malaria caused by susceptible strains of plasmodia, the physician may elect to use this drug after carefully weighing the possible benefits and risks to the patient.

## WARNINGS

It has been found that certain strains of *P. falciparum* have become resistant to 4-aminoquinoline compounds (including chloroquine and hydroxychloroquine). Chloroquine resistance is widespread and, at present, is particularly prominent in various parts of the world including sub-Saharan Africa, Southeast Asia, the Indian subcontinent, and over large portions of South America, including the Amazon basin<sup>1</sup>.

Before using chloroquine for prophylaxis, it should be ascertained whether chloroquine is appropriate for use in the region to be visited by the traveler. Chloroquine should not be used for treatment of *P. falciparum* infections acquired in areas of Chloroquine resistance or malaria occurring in patients where Chloroquine prophylaxis has failed.

Patients infected with a resistant strain of plasmodia as shown by the fact that normally adequate doses have failed to prevent or cure clinical malaria or parasitemia should be treated with another form of antimalarial therapy.

Irreversible retinal damage has been observed in some patients who had received long-term or high-dosage 4-aminoquinoline therapy. Retinopathy has been reported to be dose related.

When prolonged therapy with any antimalarial compound is contemplated, initial (base line) and periodic ophthalmologic examinations (including visual acuity, expert slit-lamp, funduscopy, and visual field tests) should be performed.

If there is any indication (past or present) of abnormality in the visual acuity, visual field, or retinal macular areas (such as pigmentary changes, loss of foveal reflex), or any visual symptoms (such as light flashes and streaks) which are not fully explainable by difficulties of accommodation or corneal opacities, the drug should be discontinued immediately and the patient closely observed for possible progression. Retinal changes (and visual disturbances) may progress even after cessation of therapy.

All patients on long-term therapy with this preparation should be questioned and examined periodically, including testing knee and ankle reflexes, to detect any evidence of muscular weakness. If weakness occurs, discontinue the drug.

A number of fatalities have been reported following the accidental ingestion of chloroquine, sometimes in relatively small doses (0.75 g or 1 g chloroquine phosphate in one 3-year-old child). Patients should be strongly warned to keep this drug out of the reach of children because they are especially sensitive to the 4-aminoquinoline compounds.

Use of ARALEN in patients with psoriasis may precipitate a severe attack of psoriasis. When used in patients with porphyria the condition may be exacerbated. The drug should not be used in these conditions unless in the judgment of the physician the benefit to the patient outweighs the potential risks.

*Usage in Pregnancy:* Radioactively tagged chloroquine administered intravenously to pregnant pigmented CBA mice passed rapidly across the placenta and accumulated selectively in the melanin structures of the fetal eyes. It was retained in the ocular tissues for five months after the drug had been eliminated from the rest of the body<sup>2</sup>. There are no adequate and well-controlled studies evaluating the safety and efficacy of chloroquine in pregnant women. Usage of chloroquine during pregnancy should be avoided except in the suppression or treatment of malaria when in the judgment of the physician the benefit outweighs the potential risk to the fetus.

## PRECAUTIONS

### Hematological

#### Effects/Laboratory Tests

Complete blood cell counts should be made periodically if patients are given prolonged therapy. If any severe blood disorder appears which is not attributable to the disease under treatment, discontinuance of the drug should be considered.

The drug should be administered with caution to patients having G-6-PD (glucose-6 phosphate dehydrogenase) deficiency.

### Auditory Effects

In patients with preexisting auditory damage, chloroquine should be administered with caution. In case of any defects in hearing, chloroquine should be immediately discontinued, and the patient closely observed (see ADVERSE REACTIONS).

**Hepatic Effects**

Since this drug is known to concentrate in the liver, it should be used with caution in patients with hepatic disease or alcoholism or in conjunction with known hepatotoxic drugs.

**Central Nervous System Effects**

Patients with history of epilepsy should be advised about the risk of chloroquine provoking seizures.

**Drug Interactions**

Antacids and kaolin: Antacids and kaolin can reduce absorption of chloroquine; an interval of at least 4 hours between intake of these agents and chloroquine should be observed.

Cimetidine: Cimetidine can inhibit the metabolism of chloroquine, increasing its plasma level. Concomitant use of cimetidine should be avoided.

Ampicillin: In a study of healthy volunteers, chloroquine significantly reduced the bioavailability of ampicillin. An interval of at least two hours between intake of this agent and chloroquine should be observed.

Cyclosporin: After introduction of chloroquine (oral form), a sudden increase in serum cyclosporin level has been reported. Therefore, close monitoring of serum cyclosporin level is recommended and, if necessary, chloroquine should be discontinued.

**Pregnancy**

See WARNINGS, Usage in Pregnancy.

**Nursing Mothers**

Because of the potential for serious adverse reactions in nursing infants from chloroquine, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the potential clinical benefit of the drug to the mother.

**Pediatric Use**

See WARNINGS and DOSAGE AND ADMINISTRATION.

**Geriatric Use**

Clinical studies of Aralen did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. However, this drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection and it may be useful to monitor renal function.

**ADVERSE REACTIONS**

*Special Senses: Ocular:* Irreversible retinal damage in patients receiving long-term or high-dosage 4-aminoquinoline therapy; visual disturbances (blurring of vision and difficulty of focusing or accommodation); nyctalopia; scotomatous vision with field defects of paracentral, pericentral ring types, and typically temporal scotomas, e.g., difficulty in reading with words tending to disappear, seeing half an object, misty vision, and fog before the eyes.

*Auditory:* Nerve type deafness; tinnitus, reduced hearing in patients with preexisting auditory damage.

*Musculoskeletal system:* Skeletal muscle myopathy or neuromyopathy leading to progressive weakness and atrophy of proximal muscle groups, which may be associated with mild sensory changes, depression of tendon reflexes and abnormal nerve conduction, have been noted.

*Gastrointestinal system:* Anorexia, nausea, vomiting, diarrhea, abdominal cramps.

*Skin and appendages:* Pleomorphic skin eruptions, skin and mucosal pigmentary changes; lichen planus-like eruptions, pruritus, photosensitivity and hair loss and bleaching of hair pigment.

*Hematologic system:* Rarely, aplastic anemia, reversible agranulocytosis, thrombocytopenia and neutropenia.

*Central Nervous system:* Convulsive seizures. Mild and transient headache. Neuropsychiatric changes including psychosis, delirium, personality changes and depression.

*Cardiovascular system:* Rarely, hypotension, electrocardiographic change (particularly, inversion or depression of the T-wave with widening of the QRS complex), and cardiomyopathy.

## OVERDOSAGE

*Symptoms:* Chloroquine is very rapidly and completely absorbed after ingestion. Toxic doses of chloroquine can be fatal. As little as 1 g may be fatal in children. Toxic symptoms can occur within minutes. These consist of headache, drowsiness, visual disturbances, nausea and vomiting, cardiovascular collapse, shock and convulsions followed by sudden and early respiratory and cardiac arrest. The electrocardiogram may reveal atrial standstill, nodal rhythm, prolonged intraventricular conduction time, and progressive bradycardia leading to ventricular fibrillation and/or arrest.

*Treatment:* Treatment is symptomatic and must be prompt with immediate evacuation of the stomach by emesis (at home, before transportation to the hospital) or gastric lavage until the stomach is completely emptied. If finely powdered, activated charcoal is introduced by stomach tube, after lavage, and within 30 minutes after ingestion of the antimalarial, it may inhibit further intestinal absorption of the drug. To be effective, the dose of activated charcoal should be at least five times the estimated dose of chloroquine ingested.

Convulsions, if present, should be controlled before attempting gastric lavage. If due to cerebral stimulation, cautious administration of an ultra short-acting barbiturate may be tried but, if due to anoxia, it should be corrected by oxygen administration and artificial respiration. Monitor ECG. In shock with hypotension, a potent vasopressor should be administered. Replace fluids and electrolytes as needed. Cardiac compressing or pacing may be indicated to sustain the circulation. Because of the importance of supporting respiration, tracheal intubation or tracheostomy, followed by gastric lavage, may also be necessary. Peritoneal dialysis and exchange transfusions have also been suggested to reduce the level of the drug in the blood.

A patient who survives the acute phase and is asymptomatic should be closely observed for at least six hours. Fluids may be forced, and sufficient ammonium chloride (8 g daily in divided doses for adults) may be administered for a few days to acidify the urine to help promote urinary excretion in cases of both overdose or sensitivity.

## DOSAGE AND ADMINISTRATION

The dosage of chloroquine phosphate is often expressed in terms of equivalent chloroquine base. Each 500 mg tablet of ARALEN contains the equivalent of 300 mg chloroquine base. In infants and children the dosage is preferably calculated by body weight.

**Malaria: Suppression—Adult Dose:** 500 mg (= 300 mg base) on exactly the same day of each week.

**Pediatric Dose:** The weekly suppressive dosage is 5 mg calculated as base, per kg of body weight, but should not exceed the adult dose regardless of weight.

If circumstances permit, suppressive therapy should begin two weeks prior to exposure. However, failing this in adults, an initial double (loading) dose of 1 g (= 600 mg base), or in children 10 mg base/kg may be taken in two divided doses, six hours apart. The suppressive therapy should be continued for eight weeks after leaving the endemic area.

**For Treatment of Acute Attack.**

**Adults:** An initial dose of 1 g (=600 mg base) followed by an additional 500 mg (= 300 mg base) after six to eight hours and a single dose of 500 mg (= 300 mg base) on each of two consecutive days. This represents a total dose of 2.5 g chloroquine phosphate or 1.5 g base in three days.

The dosage for adults of low body weight and for infants and children should be determined as follows:

First dose: 10 mg base per kg (but not exceeding a single dose of 600 mg base)

Second dose: (6 hours after first dose) 5 mg base per kg (but not exceeding a single dose of 300 mg base)

Third dose: (24 hours after first dose) 5mg base per kg

Fourth dose: (36 hours after first dose) 5 mg base per kg

For radical cure of vivax and malariae malaria concomitant therapy with an 8-aminoquinoline compound is necessary.

**Extraintestinal Amebiasis: Adults,** 1 g (600 mg base) daily for two days, followed by 500 mg (300 mg base) daily for at least two to three weeks. Treatment is usually combined with an effective intestinal amebicide.

**Geriatric Use**

See PRECAUTIONS, Geriatric Use.

**HOW SUPPLIED**

Tablets containing 500 mg chloroquine phosphate USP, equivalent to 300 mg of chloroquine base, bottles of 25 (NDC 0024-0084-01).

White, film-coated convex, discoid tablet, 1/2 inch in diameter with an uncoated core, printed in black ink with a stylized “W” on one side and an “A77” on the other side.

Dispense in tight, light-resistant container as defined in the USP/NF.

Store at 25° C (77° F); excursions permitted to 15° - 30° C (59° - 86° F) [see USP Controlled Room Temperature]

**REFERENCES**

1. Malaria Deaths Following Inappropriate Malaria Chemoprophylaxis – United States, 2001. MMWR Weekly, 2001; 50(28): 597-599.

2. Ullberg S, Lindquist N G, Sjostrand S E: Accumulation of chorioretinotoxic drugs in the foetal eye. *Nature* 1970; 227: 1257.

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**ARALEN® HYDROCHLORIDE  
CHLOROQUINE HYDROCHLORIDE INJECTION, USP**

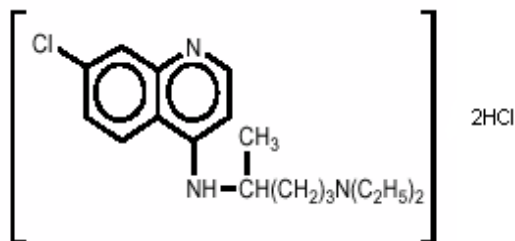
**For Malaria and Extraintestinal Amebiasis**

**DESCRIPTION**

ARALEN hydrochloride, brand of chloroquine hydrochloride, is a sterile 4-aminoquinoline compound for parenteral administration. Each mL contains 50 mg of the dihydrochloride salt equivalent to 40 mg of chloroquine base, in Water for Injection, USP.

ARALEN is an antimalarial and amebicidal drug.

Chemically, ARALEN hydrochloride is 7-chloro-4-[[4-(diethylamino)-1-methylbutyl]amino]quinoline dihydrochloride and has the following structural formula:



**CLINICAL PHARMACOLOGY**

Chloroquine is rapidly and almost completely absorbed from the gastrointestinal tract, and only a small proportion of the administered dose found in the stools. Approximately 55% of the drug in the plasma is bound to nondiffusible plasma constituents. Excretion of chloroquine is quite slow, but is increased by acidification of the urine. Chloroquine is deposited in the tissues in considerable amounts. In animals, from 200 to 700 times the plasma concentration may be found in the liver, spleen, kidney, and lung; leukocytes also concentrate the drug. The brain and spinal cord, in contrast, contain only 10 to 30 times the amount present in plasma.

Chloroquine undergoes appreciable degradation in the body. The main metabolite is desethylchloroquine, which accounts for one fourth of the total material appearing in the urine; bisdesethylchloroquine, a carboxylic acid derivative, and other metabolic products as yet uncharacterized are found in small amounts. Slightly more than half of the urinary drug products can be accounted for as unchanged chloroquine.

## Microbiology

**Mechanism of Action:** Chloroquine is an antimalarial agent. While the drug can inhibit certain enzymes, its effect is believed to result, at least in part, from its interaction with DNA. However, the mechanism of plasmodicidal action of chloroquine is not completely certain.

**Activity *in vitro* and *in vivo*:** Chloroquine is active against the erythrocytic forms of *Plasmodium vivax*, *Plasmodium malariae*, and susceptible strains of *Plasmodium falciparum* (but not the gametocytes of *P. falciparum*). It is not effective against exoerythrocytic forms of the parasite.

*In vitro* studies with trophozoites of *Entamoeba histolytica* have demonstrated that chloroquine also possess amebicidal activity comparable to that of emetine.

**Drug Resistance:** Resistance of *Plasmodium falciparum* to chloroquine is widespread and cases of *Plasmodium vivax* resistance have been reported.

## INDICATIONS AND USAGE

ARALEN hydrochloride is indicated for the treatment of extraintestinal amebiasis and for treatment of acute attacks of malaria due to *P. vivax*, *P. malariae*, *P. ovale*, and susceptible strains of *P. falciparum* when oral therapy is not feasible.

ARALEN hydrochloride does not prevent relapses in patients with vivax or malariae malaria because it is not effective against exoerythrocytic forms of the parasite, nor will it prevent vivax or malariae infection when administered as a prophylactic. It is highly effective as a suppressive agent in patients with vivax or malariae malaria, in terminating acute attacks, and significantly lengthening the interval between treatment and relapse. In patients with falciparum malaria it abolishes the acute attack and effects complete cure of the infection, unless due to a resistant strain of *P. falciparum*.

## CONTRAINDICATIONS

Use of this drug is contraindicated in the presence of retinal or visual field changes either attributable to 4-aminoquinoline compounds or to any other etiology, and in patients with known hypersensitivity to 4-aminoquinoline compounds. However, in the treatment of acute attacks of malaria caused by susceptible strains of plasmodia, the physician may elect to use this drug after carefully weighing the possible benefits and risks to the patient.

## WARNINGS

*Children and infants are extremely susceptible to adverse effects from an overdose of parenteral ARALEN and sudden deaths have been recorded after such administration. In no instance should the single dose of parenteral ARALEN administered to infants or children exceed 5 mg base per kg.*

It has been found that certain strains of *P. falciparum* have become resistant to 4-aminoquinoline compounds (including chloroquine and hydroxychloroquine). Chloroquine resistance is widespread and, at present, is particularly prominent in various parts of the world including sub-Saharan Africa, Southeast Asia, the Indian subcontinent, and over large portions of South America, including the Amazon basin<sup>1</sup>.

Before using chloroquine for prophylaxis, it should be ascertained whether chloroquine is appropriate for use in the region to be visited by the traveler. Chloroquine should not be used for treatment of *P. falciparum* infections acquired in areas of chloroquine resistance or malaria occurring in patients where chloroquine prophylaxis has failed.

Patients infected with a resistant strain of plasmodia as shown by the fact that normally adequate doses have failed to prevent or cure clinical malaria or parasitemia should be treated with another form of antimalarial therapy.

Irreversible retinal damage has been observed in some patients who had received long-term or high-dosage 4-aminoquinoline therapy. Retinopathy has been reported to be dose related.

When prolonged therapy with any antimalarial compound is contemplated, initial (baseline) and periodic ophthalmologic examinations (including visual acuity, expert slit-lamp, funduscopic, and visual field tests) should be performed.

If there is any indication (past or present) or abnormality in the visual acuity, visual field, or retinal macular areas (such as pigmentary changes, loss of foveal reflex), or any visual symptoms (such as light flashes and streaks) which are not fully explainable by difficulties of accommodation or corneal opacities, the drug should be discontinued immediately and the patient closely observed for possible progression. Retinal changes (and visual disturbances) may progress even after cessation of therapy.

All patients on long-term therapy with chloroquine should be questioned and examined periodically, including testing knee and ankle reflexes, to detect any evidence of muscular weakness. If weakness occurs, discontinue the drug.

A number of fatalities have been reported following the accidental ingestion of chloroquine, sometimes in relatively small doses (0.75 or 1 g chloroquine phosphate in one 3-year-old child). Patients should be strongly warned to keep this drug out of the reach of children because they are especially sensitive to the 4-aminoquinoline compounds.

Use of ARALEN should be avoided in patients with psoriasis, for it may precipitate a severe attack of psoriasis. Some authors consider the use of 4-aminoquinoline compounds contraindicated in patients with porphyria since the condition may be exacerbated. The drug should not be used in these conditions unless in the judgment of the physician the benefit to the patient outweighs the potential risks.

*Usage in Pregnancy:* Radioactively tagged chloroquine administered intravenously to pregnant pigmented CBA mice passed rapidly across the placenta and accumulated selectively in the melanin structures of the fetal eyes. It was retained in the ocular tissues for five months after the drug had been eliminated from the rest of the body<sup>2</sup>. There are no adequate and well-controlled studies evaluating the safety and efficacy of chloroquine in pregnant women. Usage of chloroquine during pregnancy should be avoided except in the suppression or treatment of malaria when in the judgment of the physician the benefit outweighs the potential risk to the fetus.

## **PRECAUTIONS**

### **Hematological Effects/Laboratory Tests**

Complete blood cell counts should be made periodically if patients are given prolonged therapy. If any severe blood disorder appears which is not attributable to the disease under treatment, discontinuance of the drug should be considered.

The drug should be administered with caution to patients having G-6-PD (glucose-6-phosphate dehydrogenase) deficiency.

### **Auditory Effects**

In patients with preexisting auditory damage, chloroquine should be administered with caution. In case of any defects in hearing, chloroquine should be immediately discontinued, and the patient closely observed (see ADVERSE REACTIONS).

### **Hepatic Effects**

Since this drug is known to concentrate in the liver, it should be used with caution in patients with hepatic disease or alcoholism or in conjunction with known hepatotoxic drugs.

### **Central Nervous System Effects**

Patients with history of epilepsy should be advised about the risk of chloroquine provoking seizures.

### **Drug Interactions**

**Antacids and kaolin:** Antacids and kaolin can reduce absorption of chloroquine; an interval of at least 4 hours between intake of these agents and chloroquine should be observed.

**Cimetidine:** Cimetidine can inhibit the metabolism of chloroquine, increasing its plasma level. Concomitant use of cimetidine should be avoided.

**Ampicillin:** In a study of healthy volunteers, chloroquine significantly reduced the bioavailability of ampicillin. An interval of at least two hours between intake of this agent and chloroquine should be observed.

**Cyclosporin:** After introduction of chloroquine (oral form), a sudden increase in serum cyclosporin level has been reported. Therefore, close monitoring of serum cyclosporin level is recommended and, if necessary, chloroquine should be discontinued.

### **Pregnancy**

See WARNINGS, Usage in Pregnancy.

### **Nursing Mothers**

Because of the potential for serious adverse reactions in nursing infants from chloroquine, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the potential clinical benefit of the drug to the mother.

### **Pediatric Use**

See WARNINGS and DOSAGE AND ADMINISTRATION.

## Geriatric Use

Clinical studies of Aralen did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. However, this drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection and it may be useful to monitor renal function.

## ADVERSE REACTIONS

*Special Senses: Ocular:* Irreversible retinal damage in patients receiving long-term or high-dosage 4-aminoquinoline therapy; visual disturbances (blurring of vision and difficulty in focusing or accommodation); nyctalopia; scotomatous vision with field defects or paracentral, pericentral ring types, and typically temporal scotomas, eg, difficulty in reading with words tending to disappear, seeing half an object, misty vision, and fog before the eyes.

*Auditory:* Nerve type deafness; tinnitus, reduced hearing in patients with preexisting auditory damage.

*Musculoskeletal system:* Skeletal muscle myopathy or neuromyopathy leading to progressive weakness and atrophy of proximal muscle groups, which may be associated with mild sensory changes, depression of tendon reflexes and abnormal nerve conduction, have been noted.

*Gastrointestinal system:* Anorexia, nausea, vomiting, diarrhea, abdominal cramps.

*Skin and appendages:* Pleomorphic skin eruptions, skin and mucosal pigmentary changes; lichen planus-like eruptions, pruritus, photosensitivity and hair loss and bleaching of hair pigment.

*Hematologic system:* Rarely, aplastic anemia, reversible agranulocytosis, Thrombocytopenia and neutropenia.

*Central Nervous system :* Convulsive seizures. Mild and transient headache. Neuropsychiatric changes including psychosis, delirium, personality changes and depression.

*Cardiovascular system:* Rarely, hypotension, electrocardiographic change (particularly, inversion or depression of the T-wave with widening of the ORS complex), and cardiomyopathy.

## OVERDOSAGE

*Symptoms:* Toxic doses of chloroquine can be fatal. Doses should not exceed 5 mg base per kg. See WARNING concerning overdose in children. Toxic symptoms may occur within minutes. These consist of headache, drowsiness, nausea and vomiting, visual disturbances, cardiovascular collapse, shock, and convulsions followed by sudden and early respiratory and cardiac arrest. The electrocardiogram may reveal atrial standstill, nodal rhythm, prolonged intraventricular conduction time, and progressive bradycardia leading to ventricular fibrillation and/or arrest.

*Treatment:* Administer intravenous fluids. Peritoneal dialysis and exchange transfusions may be tried. Treat respiratory depression by artificial respiration, oxygen intubation or tracheostomy, if necessary. If present, convulsions due to cerebral stimulation may be treated with cautious administration of an ultra-short acting barbiturate. If convulsions are due to anoxia, it should be corrected by oxygen administration and artificial respiration. Monitor ECG.

In shock with hypotension, a potent vasopressor should be given intramuscularly in doses of 2 mg to 5 mg. Replace fluids and electrolytes as needed. Cardiac compressing or pacing may be indicated to sustain the circulation.

A patient who survives the acute phase and is asymptomatic should be closely observed for at least six hours. Fluids may be forced, and sufficient ammonium chloride (8 g daily in divided doses for adults) may be administered for a few days to acidify the urine to promote urinary excretion in cases of both overdosage and sensitivity.

## DOSAGE AND ADMINISTRATION

**Malaria—Adult Dose.** An initial dose of 4 mL or 5 mL (160 mg to 200 mg chloroquine base) may be injected intramuscularly and repeated in 6 hours if necessary. The total parenteral dosage in the first 24 hours should not exceed 800 mg chloroquine base. Treatment by mouth should be started as soon as practicable and continued until a course of approximately 1.5g of base in 3 days is completed.

**Pediatric Dose.** Infants and children are extremely susceptible to overdosage of parenteral ARALEN. Severe reactions and deaths have occurred. In the pediatric age range, parenteral ARALEN dosage should be calculated in proportion to the adult dose based upon body weight. The recommended single dose in infants and children is 5 mg base per kg. This dose may be repeated in 6 hours; however, the total dose in any 24 hour period should not exceed 10 mg base per kg of body weight. Parenteral administration should be terminated and oral therapy instituted as soon as possible.

**Extraintestinal Amebiasis**—In adult patients not able to tolerate oral therapy, from 4 mL to 5 mL (160 mg to 200 mg chloroquine base) may be injected daily for 10 to 12 days. Oral administration should be substituted or resumed as soon as possible.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration.

### Geriatric Use

See PRECAUTIONS, Geriatric Use.

## HOW SUPPLIED

Ampules of 5 mL (250 mg/5 mL), box of 5 (NDC 0024-0074-01). Each mL contains 50 mg of the dihydrochloride salt equivalent to 40 mg of chloroquine base, in Water for Injection, USP.

Store at 25° C (77° F); excursions permitted to 15° - 30° C (59° - 86° F) [see USP Controlled Room Temperature]

## REFERENCE

1. Malaria Deaths Following Inappropriate Malaria Chemoprophylaxis – United States, 2001. *MMWR Weekly*, 2001; 50(28): 597-599.
2. Ullberg S, Lindquist N G, Sjostrand S E: Accumulation of chorio-retinotoxic drugs in the foetal eye. *Nature* 1970; 227: 1257.

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