RIFAMPIN- rifampin capsule
Golden State Medical Supply

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RIFAMPIN CAPSULES, USP
Rx Only
Rev. 11/18

To reduce the development of drug-resistant bacteria and maintain the effectiveness of rifampin capsules USP and other antibacterial drugs, rifampin should be used only to treat or prevent infections that are proven or strongly suspected to be caused by bacteria.

DESCRIPTION

Rifampin capsules, USP for oral administration contain 150 mg or 300 mg rifampin per capsule. The 150 mg and 300 mg capsules also contain, as inactive ingredients: colloidal silicon dioxide, corn starch, FD&C Blue No. 1, FD&C Red No. 40, gelatin, lactose monohydrate, magnesium stearate, sodium lauryl sulfate, talc, and titanium dioxide.

The printing ink contains ammonium hydroxide, isopropyl alcohol, n-butyl alcohol, pharmaceutical glaze, propylene glycol, simethicone, and titanium dioxide.

Rifampin is a semisynthetic antibiotic derivative of rifamycin SV. Rifampin is a red-brown crystalline powder very slightly soluble in water at neutral pH, freely soluble in chloroform, soluble in ethyl acetate and in methanol. Its molecular weight is 822.95 and its chemical formula is C_{43}H_{58}N_{4}O_{12}.

The chemical name for rifampin is either:

3-[(4-Methyl-1-piperazinyl)imino]methyl]rifamycin

- or


Its structural formula is:

![Structural formula of rifampin]

CLINICAL PHARMACOLOGY

Oral Administration

Rifampin is readily absorbed from the gastrointestinal tract. Peak serum concentrations in healthy adults and pediatric populations vary widely from individual to individual. Following a single 600 mg oral dose of rifampin in healthy adults, the peak serum concentration averages 7 mcg/mL but may vary from 4 to 32 mcg/mL. Absorption of rifampin is reduced by about 30% when the drug is ingested with food.
Rifampin is widely distributed throughout the body. It is present in effective concentrations in many organs and body fluids, including cerebrospinal fluid. Rifampin is about 80% protein bound. Most of the unbound fraction is not ionized and, therefore, diffuses freely into tissues.

In healthy adults, the mean biological half-life of rifampin in serum averages 3.35 ± 0.66 hours after a 600 mg oral dose, with increases up to 5.08 ± 2.45 hours reported after a 900 mg dose. With repeated administration, the half-life decreases and reaches average values of approximately 2 to 3 hours. The half-life does not differ in patients with renal failure at doses not exceeding 600 mg daily, and consequently, no dosage adjustment is required. The half-life of rifampin at a dose of 720 mg daily has not been established in patients with renal failure. Following a single 900 mg oral dose of rifampin in patients with varying degrees of renal insufficiency, the mean half-life increased from 3.6 hours in healthy adults to 5.0, 7.3, and 11.0 hours in patients with glomerular filtration rates of 30 to 50 mL/min, less than 30 mL/min, and in anuric patients, respectively. Refer to the WARNINGS section for information regarding patients with hepatic insufficiency.

After absorption, rifampin is rapidly eliminated in the bile, and an enterohepatic circulation ensues. During this process, rifampin undergoes progressive deacetylation so that nearly all the drug in the bile is in this form in about 6 hours. This metabolite has antibacterial activity. Intestinal reabsorption is reduced by deacetylation, and elimination is facilitated. Up to 30% of a dose is excreted in the urine, with about half of this being unchanged drug.

**Pediatrics**

**Oral Administration**

In one study, pediatric patients 6 to 58 months old were given rifampin suspended in simple syrup or as dry powder mixed with applesauce at a dose of 10 mg/kg body weight. Peak serum concentrations of 10.7 ± 3.7 and 11.5 ± 5.1 mcg/mL were obtained 1 hour after preprandial ingestion of the drug suspension and the applesauce mixture, respectively. After the administration of either preparation, the t½ of rifampin averaged 2.9 hours. It should be noted that in other studies in pediatric populations, at doses of 10 mg/kg body weight, mean peak serum concentrations of 3.5 mcg/mL to 15 mcg/mL have been reported.

**Microbiology**

**Mechanism of Action**

Rifampin inhibits DNA-dependent RNA polymerase activity in susceptible *Mycobacterium tuberculosis* organisms. Specifically, it interacts with bacterial RNA polymerase but does not inhibit the mammalian enzyme.

**Resistance**

Organisms resistant to rifampin are likely to be resistant to other rifamycins. In addition, resistance to rifampin has been determined to occur as single-step mutations of the DNA-dependent RNA polymerase. Since resistance can emerge rapidly, appropriate susceptibility tests should be performed in the event of persistent positive cultures.

**Activity in vitro and in vivo**

Rifampin has bactericidal activity in vitro against slow and intermittently growing *M tuberculosis* organisms.

Rifampin has been shown to be active against most strains of the following microorganisms, both in vitro and in clinical infections as described in the INDICATIONS AND USAGE section.

**Aerobic Gram-Negative Microorganisms:**

*Neisseria meningitidis*

"Other" Microorganisms:
Mycobacterium tuberculosis

The following in vitro data are available, but their clinical significance is unknown.

Rifampin exhibits in vitro activity against most strains of the following microorganisms; however, the safety and effectiveness of rifampin in treating clinical infections due to these microorganisms have not been established in adequate and well-controlled trials.

Aerobic Gram-Positive Microorganisms:
Staphylococcus aureus (including Methicillin-Resistant S. aureus/MRSA)
Staphylococcus epidermidis

Aerobic Gram-Negative Microorganisms:
Haemophilus influenzae

"Other" Microorganisms:
Mycobacterium leprae

β-lactamase production should have no effect on rifampin activity.

Susceptibility Testing

For specific information regarding susceptibility test criteria and associated test methods and quality control standards recognized by FDA for this drug, please see: www.fda.gov/STIC.

INDICATIONS AND USAGE

In the treatment of both tuberculosis and the meningococcal carrier state, the small number of resistant cells present within large populations of susceptible cells can rapidly become the predominant type. Bacteriologic cultures should be obtained before the start of therapy to confirm the susceptibility of the organism to rifampin and they should be repeated throughout therapy to monitor the response to treatment. Since resistance can emerge rapidly, susceptibility tests should be performed in the event of persistent positive cultures during the course of treatment. If test results show resistance to rifampin and the patient is not responding to therapy, the drug regimen should be modified.

Tuberculosis

Rifampin is indicated in the treatment of all forms of tuberculosis.

A three-drug regimen consisting of rifampin, isoniazid, and pyrazinamide [e.g., RIFATER ®] 1 is recommended in the initial phase of short-course therapy which is usually continued for 2 months. The Advisory Council for the Elimination of Tuberculosis, the American Thoracic Society, and Centers for Disease Control and Prevention recommend that either streptomycin or ethambutol be added as a fourth drug in a regimen containing isoniazid (INH), rifampin, and pyrazinamide for initial treatment of tuberculosis unless the likelihood of INH resistance is very low. The need for a fourth drug should be reassessed when the results of susceptibility testing are known. If community rates of INH resistance are currently less than 4%, an initial treatment regimen with less than four drugs may be considered.

Following the initial phase, treatment should be continued with rifampin and isoniazid [e.g., RIFAMATE ®] 2 for at least 4 months. Treatment should be continued for longer if the patient is still sputum or culture positive, if resistant organisms are present, or if the patient is HIV positive.

Meningococcal Carriers

Rifampin is indicated for the treatment of asymptomatic carriers of Neisseria meningitidis to eliminate meningococci from the nasopharynx. Rifampin is not indicated for the treatment of meningococcal infection because of the possibility of the rapid emergence of resistant organisms. (See WARNINGS).

Rifampin should not be used indiscriminately, and therefore, diagnostic laboratory procedures,
including serotyping and susceptibility testing, should be performed for establishment of the carrier state and the correct treatment. So that the usefulness of rifampin in the treatment of asymptomatic meningococcal carriers is preserved, the drug should be used only when the risk of meningococcal disease is high.

To reduce the development of drug-resistant bacteria and maintain the effectiveness of rifampin and other antibacterial drugs, rifampin should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

**CONTRAINDICATIONS**

Rifampin is contraindicated in patients with a history of hypersensitivity to rifampin or any of the components, or to any of the rifamycins. (See **WARNINGS**).

Rifampin is contraindicated in patients who are also receiving ritonavir-boosted saquinavir due to an increased risk of severe hepatocellular toxicity. (See **PRECAUTIONS, Drug Interactions**.)

Rifampin is contraindicated in patients who are also receiving atazanavir, darunavir, fosamprenavir, saquinavir, or tipranavir due to the potential of rifampin to substantially decrease plasma concentrations of these antiviral drugs, which may result in loss of antiviral efficacy and/or development of viral resistance.

**WARNINGS**

Rifampin has been shown to produce liver dysfunction. Fatalities associated with jaundice have occurred in patients with liver disease and in patients taking rifampin with other hepatotoxic agents. Patients with impaired liver function should be given rifampin only in cases of necessity and then with caution and under strict medical supervision. In these patients, careful monitoring of liver function, especially SGPT/ALT and SGOT/AST should be carried out prior to therapy and then every 2 to 4 weeks during therapy. If signs of hepatocellular damage occur, rifampin should be withdrawn.

In some cases, hyperbilirubinemia resulting from competition between rifampin and bilirubin for excretory pathways of the liver at the cell level can occur in the early days of treatment. An isolated report showing a moderate rise in bilirubin and/or transaminase level is not in itself an indication for interrupting treatment; rather, the decision should be made after repeating the tests, noting trends in the levels, and considering them in conjunction with the patient’s clinical condition.

Rifampin has enzyme-inducing properties, including induction of delta amino levulinic acid synthetase. Isolated reports have associated porphyria exacerbation with rifampin administration.

The possibility of rapid emergence of resistant meningococci restricts the use of rifampin to short-term treatment of the asymptomatic carrier state. **Rifampin is not to be used for the treatment of meningococcal disease.**

Systemic hypersensitivity reactions, including Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome, may occur in patients receiving rifampin (see **ADVERSE REACTIONS**). Signs and symptoms of hypersensitivity reactions may include fever, rash, urticaria, angioedema, hypotension, acute bronchospasm, conjunctivitis, thrombocytopenia, neutropenia, elevated liver transaminases or flu-like syndrome (weakness, fatigue, muscle pain, nausea, vomiting, headache, chills, aches, itching, sweats, dizziness, shortness of breath, chest pain, cough, syncope, palpitates). These reactions may be severe and DRESS may be fatal. Manifestations of hypersensitivity, such as fever, lymphadenopathy or laboratory abnormalities (including eosinophilia, liver abnormalities) may be present even though rash is not evident. Monitor patients receiving rifampin for signs and/or symptoms of hypersensitivity
reactions. If these signs or symptoms occur, discontinue rifampin and administer supportive measures.

PRECAUTIONS

General
Rifampin should be used with caution in patients with a history of diabetes mellitus, as diabetes management may be more difficult.

Prescribing rifampin in the absence of a proven or strongly suspected bacterial infection or a prophylactic indication is unlikely to provide benefit to the patient and increases the risk of the development of drug-resistant bacteria.

For the treatment of tuberculosis, rifampin is usually administered on a daily basis. Doses of rifampin greater than 600 mg given once or twice weekly have resulted in a higher incidence of adverse reactions, including the "flu syndrome" (fever, chills and malaise), hematopoietic reactions (leukopenia, thrombocytopenia, or acute hemolytic anemia), cutaneous, gastrointestinal, and hepatic reactions, shortness of breath, shock, anaphylaxis, and renal failure. Recent studies indicate that regimens using twice-weekly doses of rifampin 600 mg plus isoniazid 15 mg/kg are much better tolerated.

Rifampin is not recommended for intermittent therapy; the patient should be cautioned against intentional or accidental interruption of the daily dosage regimen since rare renal hypersensitivity reactions have been reported when therapy was resumed in such cases.

Rifampin has enzyme induction properties that can enhance the metabolism of endogenous substrates including adrenal hormones, thyroid hormones, and vitamin D. Rifampin and isoniazid have been reported to alter vitamin D metabolism. In some cases, reduced levels of circulating 25-hydroxy vitamin D and 1,25-dihydroxy vitamin D have been accompanied by reduced serum calcium and phosphate, and elevated parathyroid hormone.

Information for Patients

Patients should be counseled that antibacterial drugs including rifampin should only be used to treat bacterial infections. They do not treat viral infections (e.g., the common cold). When rifampin is prescribed to treat a bacterial infection, patients should be told that although it is common to feel better early in the course of therapy, the medication should be taken exactly as directed. Skipping doses or not completing the full course of therapy may (1) decrease the effectiveness of the immediate treatment and (2) increase the likelihood that bacteria will develop resistance and will not be treatable by rifampin or other antibacterial drugs in the future.

The patient should be told that rifampin may produce a discoloration (yellow, orange, red, brown) of the teeth, urine, sweat, sputum, and tears, and the patient should be forewarned of this. Soft contact lenses may be permanently stained.

The patient should be advised that the reliability of oral or other systemic hormonal contraceptives may be affected; consideration should be given to using alternative contraceptive measures.

Patients should be instructed to take rifampin either 1 hour before or 2 hours after a meal with a full glass of water.

Patients should be instructed to notify their physicians promptly if they experience any of the following: rash, fever, or swollen lymph nodes, loss of appetite, malaise, nausea and vomiting, darkened urine, yellowish discoloration of the skin and eyes, cough, shortness of breath, wheezing and pain or swelling of the joints.

Compliance with the full course of therapy must be emphasized, and the importance of not missing any doses must be stressed.

Laboratory Tests
Adults treated for tuberculosis with rifampin should have baseline measurements of hepatic enzymes, bilirubin, serum creatinine, a complete blood count, and a platelet count (or estimate). Baseline tests are unnecessary in pediatric patients unless a complicating condition is known or clinically suspected.

Patients should be seen at least monthly during therapy and should be specifically questioned concerning symptoms associated with adverse reactions. All patients with abnormalities should have follow-up, including laboratory testing, if necessary. Routine laboratory monitoring for toxicity in people with normal baseline measurements is generally not necessary.

**Drug Interactions**

Healthy subjects who received rifampin 600 mg once daily concomitantly with saquinavir 1000 mg/ritonavir 100 mg twice daily (ritonavir-boosted saquinavir) developed severe hepatocellular toxicity. Therefore, concomitant use of these medications is contraindicated. (See **CONTRAINDICATIONS**.)

**Enzyme Induction:** Rifampin is known to induce certain cytochrome P-450 enzymes. Administration of rifampin with drugs that undergo biotransformation through these metabolic pathways may accelerate elimination of coadministered drugs. To maintain optimum therapeutic blood levels, dosages of drugs metabolized by these enzymes may require adjustment when starting or stopping concomitantly administered rifampin.

Rifampin has been reported to substantially decrease the plasma concentrations of the following antiviral drugs: atazanavir, darunavir, fosamprenavir, saquinavir, and tipranavir. These antiviral drugs must not be co-administered with rifampin. (See **CONTRAINDICATIONS**.)

Rifampin has been reported to accelerate the metabolism of the following drugs: anticonvulsants (e.g., phenytoin), digitoxin, antiarrhythmics (e.g., disopyramide, mexiletine, quinidine, tocainide), oral anticoagulants, antifungals (e.g., fluconazole, itraconazole, ketoconazole), barbiturates, beta-blockers, calcium channel blockers (e.g., diltiazem, nifedipine, verapamil), chloramphenicol, clarithromycin, corticosteroids, cyclosporine, cardiac glycoside preparations, clofibrate, oral or other systemic hormonal contraceptives, dapsone, diazepam, doxycycline, fluoroquinolones (e.g., ciprofloxacin), haloperidol, oral hypoglycemic agents (sulfonylureas), levothyroxine, methadone, narcotic analgesics, progestins, quinine, tacrolimus, theophylline, tricyclic antidepressants (e.g., amitriptyline, nortriptyline) and zidovudine. It may be necessary to adjust the dosages of these drugs if they are given concurrently with rifampin.

Patients using oral or other systemic hormonal contraceptives should be advised to change to non-hormonal methods of birth control during rifampin therapy.

Rifampin has been observed to increase the requirements for anticoagulant drugs of the coumarin type. In patients receiving anticoagulants and rifampin concurrently, it is recommended that the prothrombin time be performed daily or as frequently as necessary to establish and maintain the required dose of anticoagulant.

Other Interactions: When the two drugs were taken concomitantly, decreased concentrations of atovaquone and increased concentrations of rifampin were observed.

Concurrent use of ketoconazole and rifampin has resulted in decreased serum concentrations of both drugs. Concurrent use of rifampin and enalapril has resulted in decreased concentrations of enalaprilat, the active metabolite of enalapril. Dosage adjustments should be made if indicated by the patient's clinical condition.

Concomitant antacid administration may reduce the absorption of rifampin. Daily doses of rifampin should be given at least 1 hour before the ingestion of antacids.

Probenecid and cotrimoxazole have been reported to increase the blood level of rifampin.

When rifampin is given concomitantly with either halothane or isoniazid, the potential for hepatotoxicity
is increased. The concomitant use of rifampin and halothane should be avoided. Patients receiving both rifampin and isoniazid should be monitored close for hepatotoxicity.

Plasma concentrations of sulfapyridine may be reduced following the concomitant administration of sulfaosalazine and rifampin. This finding may be the result of alteration in the colonic bacteria responsible for the reduction of sulfaosalazine to sulfapyridine and mesalamine.

**Drug/Laboratory Interactions**

Cross-reactivity and false-positive urine screening tests for opiates have been reported in patients receiving rifampin when using the KIMS (Kinetic Interaction of Microparticles in Solution) method (e.g., Abuscreen OnLine opiates assay; Roche Diagnostic Systems). Confirmatory tests, such as gas chromatography/mass spectrometry, will distinguish rifampin from opiates.

Therapeutic levels of rifampin have been shown to inhibit standard microbiological assays for serum folate and vitamin B₁₂. Thus, alternate assay methods should be considered. Transient abnormalities in liver function tests (e.g., elevation in serum bilirubin, alkaline phosphatase, and serum transaminases) and reduced biliary excretion of contrast media used for visualization of the gallbladder have also been observed. Therefore, these tests should be performed before the morning dose of rifampin.

**Carcinogenesis, Mutagenesis, Impairment of Fertility**

A few cases of accelerated growth of lung carcinoma have been reported in man, but a causal relationship with the drug has not been established. Hepatomas were increased in female (C3Hf/DP) mice dosed for 60 weeks with rifampicin followed by an observation period of 46 weeks, at 20 to 120 mg/kg (equivalent to 0.1 to 0.5 times the maximum dosage used clinically, based on body surface area comparisons). There was no evidence of tumorigenicity in male C3Hf/DP mice or in similar studies in BALB/c mice, or in two year studies in Wistar rats.

There was no evidence of mutagenicity in both prokaryotic (*Salmonella typhi*, *Escherichia coli*) and eukaryotic (*Saccharomyces cerevisiae*) bacteria, *Drosophila melanogaster*, or ICR/Ha Swiss mice. An increase in chromatid breaks was noted when whole blood cell cultures were treated with rifampin. Increased frequency of chromosomal aberrations was observed in vitro in lymphocytes obtained from patients treated with combinations of rifampin, isoniazid, and pyrazinamide and combinations of streptomycin, rifampin, isoniazid, and pyrazinamide.

**Pregnancy-Teratogenic Effects**

Category C. Rifampin has been shown to be teratogenic in rodents. Congenital malformations, primarily spina bifida were increased in the offspring of pregnant rats given rifampin during organogenesis at oral doses of 150 to 250 mg/kg/day (about 1 to 2 times the maximum recommended human dose based on body surface area comparisons). Cleft palate was increased in a dose-dependent fashion in fetuses of pregnant mice treated at oral doses of 50 to 200 mg/kg (about 0.2 to 0.8 times the maximum recommended human dose based on body surface area comparisons). Imperfect osteogenesis and embryotoxicity were also reported in pregnant rabbits given rifampin at oral doses up to 200 mg/kg/day (about 3 times the maximum recommended human dose based on body surface area comparisons). There are no adequate and well-controlled studies of rifampin in pregnant women. Rifampin has been reported to cross the placental barrier and appear in cord blood. Rifampin should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Pregnancy-Non-Teratogenic Effects**

When administered during the last few weeks of pregnancy, rifampin can cause post-natal hemorrhages in the mother and infant for which treatment with vitamin K may be indicated.

**Nursing Mothers**

Because of the potential for tumorigenicity shown for rifampin in animal studies, a decision should be
made whether to discontinue nursing or discontinue the drug, taking into account the importance of the
drug to the mother.

**Pediatric Use**
See CLINICAL PHARMACOLOGY–Pediatrics; see also DOSAGE AND ADMINISTRATION.

**Geriatric Use**
Clinical studies of rifampin did not include sufficient numbers of subjects aged 65 and over to
determine whether they respond differently from younger subjects. Other reported clinical experience
has not identified differences in responses between the elderly and younger patients. Caution should
therefore be observed in using rifampin in elderly patients. (See WARNINGS).

**ADVERSE REACTIONS**

**Gastrointestinal**
Heartburn, epigastric distress, anorexia, nausea, vomiting, jaundice, flatulence, cramps, and diarrhea
have been noted in some patients. Although *Clostridium difficile* has been shown *in vitro* to be sensitive to rifampin, pseudomembranous colitis has been reported with the use of rifampin (and other broad
spectrum antibiotics). Therefore, it is important to consider this diagnosis in patients who develop
diarrhea in association with antibiotic use. Tooth discoloration (which may be permanent) may occur.

**Hepatic**
Transient abnormalities in liver function tests (e.g., elevations in serum bilirubin, alkaline phosphatase,
serum transaminases) have been observed. Rarely, hepatitis or a shock-like syndrome with hepatic
involvement and abnormal liver function tests has been reported.

**Hematologic**
Thrombocytopenia has occurred primarily with high dose intermittent therapy, but has also been noted
after resumption of interrupted treatment. It rarely occurs during well supervised daily therapy. This
effect is reversible if the drug is discontinued as soon as purpura occurs. Cerebral hemorrhage and
fatalities have been reported when rifampin administration has been continued or resumed after the
appearance of purpura.

Rare reports of disseminated intravascular coagulation have been observed.
Leukopenia, hemolytic anemia, and decreased hemoglobin have been observed.
Agranulocytosis has been reported very rarely.

**Central Nervous System**
Headache, fever, drowsiness, fatigue, ataxia, dizziness, inability to concentrate, mental confusion,
behavioral changes, muscular weakness, pains in extremities, and generalized numbness have been
observed.

Psychoses have been rarely reported.

Rare reports of myopathy have also been observed.

**Ocular**
Visual disturbances have been observed.

**Endocrine**
Menstrual disturbances have been observed.
Rare reports of adrenal insufficiency in patients with compromised adrenal function have been observed.

**Renal**
Elevations in BUN and serum uric acid have been reported. Rarely, hemolysis, hemoglobinuria, hematuria, interstitial nephritis, acute tubular necrosis, renal insufficiency, and acute renal failure have been noted. These are generally considered to be hypersensitivity reactions. They usually occur during intermittent therapy or when treatment is resumed following intentional or accidental interruption of a daily dosage regimen, and are reversible when rifampin is discontinued and appropriate therapy instituted.

**Dermatologic**
Cutaneous reactions are mild and self-limiting and do not appear to be hypersensitivity reactions. Typically, they consist of flushing and itching with or without a rash. More serious cutaneous reactions which may be due to hypersensitivity occur but are uncommon.

**Hypersensitivity Reactions**
Occasionally, pruritus, urticaria, rash, pemphigoid reaction, erythema multiforme including Stevens-Johnson Syndrome (see **WARNINGS**), toxic epidermal necrolysis, Drug Reaction with Eosinophilia and Systemic Symptoms syndrome, vasculitis, eosinophilia, sore mouth, sore tongue, and conjunctivitis have been observed.
Anaphylaxis has been reported rarely.

**Miscellaneous**
Edema of the face and extremities have been reported. Other reactions which have occurred with intermittent dosage regimens include "flu syndrome" (such as episodes of fever, chills, headache, dizziness, and bone pain), shortness of breath, wheezing, decrease in blood pressure and shock. The "flu syndrome" may also appear if rifampin is taken irregularly by the patient or if daily administration is resumed after a drug free interval.
To report SUSPECTED ADVERSE REACTIONS, contact VersaPharm Incorporated at 1-877-254-4381, or the FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

**OVERDOSAGE**
**Signs and Symptoms**
Nausea, vomiting, abdominal pain, pruritus, headache, and increasing lethargy will probably occur within a short time after ingestion; unconsciousness may occur when there is severe hepatic disease. Transient increases in liver enzymes and/or bilirubin may occur. Brownish-red or orange discoloration of the skin, urine, sweat, saliva, tears, and feces will occur, and its intensity is proportional to the amount ingested.
Liver enlargement, possibly with tenderness, can develop within a few hours after severe overdosage; bilirubin levels may increase and jaundice may develop rapidly. Hepatic involvement may be more marked in patients with prior impairment of hepatic function. Other physical findings remain essentially normal. A direct effect upon the hematopoietic system, electrolyte levels, or acid-base balance is unlikely.
Facial or periorbital edema has also been reported in pediatric patients. Hypotension, sinus tachycardia, ventricular arrhythmias, seizures and cardiac arrest were reported in some fatal cases.

**Acute Toxicity**
The minimum acute lethal or toxic dose is not well established. However, nonfatal acute overdoses in adults have been reported with doses ranging from 9 to 12 gm rifampin. Fatal acute overdoses in adults have been reported with doses ranging from 14 to 60 gm. Alcohol or a history of alcohol abuse was involved in some of the fatal and nonfatal reports. Nonfatal overdoses in pediatric patients ages 1 to 4 years old of 100 mg/kg for one to two doses has been reported.

**Treatment**

Intensive support measures should be instituted and individual symptoms treated as they arise. The airway should be secured and adequate respiratory exchange established. Since nausea and vomiting are likely to be present, gastric lavage within the first 2 to 3 hours after ingestion is probably preferable to induction of emesis. Following evacuation of the gastric contents, the instillation of activated charcoal slurry into the stomach may help absorb any remaining drug from the gastrointestinal tract. Antiemetic medication may be required to control severe nausea and vomiting.

Active diuresis (with measured intake and output) will help promote excretion of the drug.

For severe cases, extracorporeal hemodialysis may be required. If this is not available, peritoneal dialysis can be used along with forced diuresis.

**DOSAGE AND ADMINISTRATION**

Rifampin can be administered by the oral route (see INDICATIONS AND USAGE).

See CLINICAL PHARMACOLOGY for dosing information in patients with renal failure.

**Tuberculosis**

Adults: 10 mg/kg, in a single daily administration, not to exceed 600 mg/day.

Pediatric Patients: 10-20 mg/kg, not to exceed 600 mg/day.

It is recommended that oral rifampin be administered once daily, either 1 hour before or 2 hours after a meal with a full glass of water.

Rifampin is indicated in the treatment of all forms of tuberculosis. A three-drug regimen consisting of rifampin, isoniazid, and pyrazinamide [e.g., RIFATER ®] 1 is recommended in the initial phase of short-course therapy which is usually continued for 2 months. The Advisory Council for the Elimination of Tuberculosis, the American Thoracic Society, and the Centers for Disease Control and Prevention recommend that either streptomycin or ethambutol be added as a fourth drug in a regimen containing isoniazid (INH), rifampin and pyrazinamide for initial treatment of tuberculosis unless the likelihood of INH resistance is very low. The need for a fourth drug should be reassessed when the results of susceptibility testing are known. If community rates of INH resistance are currently less than 4%, an initial treatment regimen with less than four drugs may be considered.

Following the initial phase, treatment should be continued with rifampin and isoniazid [RIFAMATE ®] 2 for at least 4 months. Treatment should be continued for longer if the patient is still sputum or culture positive, if resistant organisms are present, or if the patient is HIV positive.

**Meningococcal Carriers**

Adults: For adults, it is recommended that 600 mg rifampin be administered twice daily for two days.

Pediatric Patients: Pediatric patients 1 month of age or older: 10 mg/kg (not to exceed 600 mg per dose) every 12 hours for two days.

Pediatric patients under 1 month of age: 5 mg/kg every 12 hours for two days.

**Preparation of Extemporaneous Oral Suspension**

For pediatric and adult patients in whom capsule swallowing is difficult or where lower doses are
needed, a liquid suspension may be prepared as follows:

Rifampin 1% w/v suspension (10 mg/mL) can be compounded using Simple Syrup (Syrup NF), Simple Syrup (Humco Laboratories), SyrPalta® Syrup (Emerson Laboratories), or Raspberry Syrup (Humco Laboratories).

1. Empty the contents of four Rifampin 300 mg capsules or eight Rifampin 150 mg capsules onto a piece of weighing paper.
2. If necessary, gently crush the capsule contents with a spatula to produce a fine powder.
3. Transfer the rifampin powder blend to a 4-ounce amber glass or plastic (high density polyethylene [HDPE], polypropylene, or polycarbonate) prescription bottle.
4. Rinse the paper and spatula with 20 mL of one of the above mentioned syrup, and add the rinse to the bottle. Shake vigorously.
5. Add 100 mL of syrup to the bottle and shake vigorously.

This compounding procedure results in a 1% w/v suspension containing 10 mg rifampin/mL. Stability studies indicate that the suspension is stable when stored at room temperature (25 ± 3°C) or in a refrigerator (2-8°C) for four weeks. This extemporaneously prepared suspension must be shaken well prior to administration.

HOW SUPPLIED

Rifampin Capsules, USP, 150 mg opaque orange capsules printed in white on one half of the capsule in radial print “Rifampin 150” and on the other half in radial print “VP/015”
- Bottles of 30 (NDC 51407-322-30)
- Bottles of 100 (NDC 51407-322-01)

Rifampin Capsules, USP, 300 mg opaque orange capsules printed in white on one half of the capsule in radial print “Rifampin 300” and on the other half in radial print “VP/018”
- Bottles of 30 (NDC 51407-323-30)
- Bottles of 60 (NDC 51407-323-60)
- Bottles of 100 (NDC 51407-323-01)


REFERENCES

1. RIFATER® (rifampin, isoniazid, and pyrazinamide) is a registered trademark of Sanofi-Aventis U.S. LLC.
2. RIFAMATE® (rifampin and isoniazid) is a registered trademark of Sanofi-Aventis U.S. LLC.

Manufactured for:

VersaPharm Inc. – an Akorn Company

Lake Forest, IL 60045

Manufactured by:

Patheon Pharmaceuticals Inc.

Cincinnati, OH 45237

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PRINCIPAL DISPLAY PANEL
NDC 51407-322-30
Rifampin
Capsules, USP
150 mg
Rx Only
30 Capsules

PRINCIPAL DISPLAY PANEL
NDC 51407-323-30
Rifampin
RIFAMPIN
rifampin capsule

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<tr>
<th>Active Ingredient/Active Moiety</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ingredient Name</strong></td>
</tr>
<tr>
<td>RIFAMPIN (UNII: VJT6J7R4TR) (RIFAMPIN - UNII: VJT6J7R4TR)</td>
</tr>
</tbody>
</table>

| Inactive Ingredients |
Ingredients:

- **LACTOSE MONOHYDRATE** (UNII: EWQ57Q8I5X)
- **SODIUM LAURYL SULFATE** (UNII: 368GB5141J)
- **TALC** (UNII: 7SEV7J4R1U)
- **STARCH, CORN** (UNII: O8232NY3SJ)
- **SILICON DIOXIDE** (UNII: ETJ7Z6XBU4)
- **MAGNESIUM STEARATE** (UNII: 70097M6B30)
- **AMMONIA** (UNII: 5138Q19F1X)
- **ISOPROPYL ALCOHOL** (UNII: ND2M416302)
- **BUTYL ALCOHOL** (UNII: 8PJ61P6TS3)
- **SHELLAC** (UNII: 46N107B71O)
- **PROPYLENE GLYCOL** (UNII: 6DC9Q167V3)
- **DIMETHICONE** (UNII: 92RU3N3Y1O)
- **TITANIUM DIOXIDE** (UNII: 15FIX9V2JP)
- **FD&C BLUE NO. 1** (UNII: H3R47K3TBD)
- **FD&C RED NO. 40** (UNII: WZB9127XOA)
- **GELATIN, UNSPECIFIED** (UNII: 2G86QN327L)

Product Characteristics:

- **Color**: orange (ORANGE)
- **Score**: no score
- **Shape**: CAPSULE (CAPSULE)
- **Size**: 18mm
- **Flavor**
- **Imprint Code**: Rifampin;150;VP;015

Packaging:

<table>
<thead>
<tr>
<th>#</th>
<th>Item Code</th>
<th>Package Description</th>
<th>Marketing Start Date</th>
<th>Marketing End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NDC:51407-322-30</td>
<td>30 in 1 BOTTLE, PLASTIC; Type 0: Not a Combination Product</td>
<td>02/10/2020</td>
<td></td>
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<tr>
<td>2</td>
<td>NDC:51407-322-01</td>
<td>100 in 1 BOTTLE, PLASTIC; Type 0: Not a Combination Product</td>
<td>02/10/2020</td>
<td></td>
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</tbody>
</table>

Marketing Information:

<table>
<thead>
<tr>
<th>Marketing Category</th>
<th>Application Number or Monograph Citation</th>
<th>Marketing Start Date</th>
<th>Marketing End Date</th>
</tr>
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<tbody>
<tr>
<td>ANDA</td>
<td>ANDA065028</td>
<td>03/14/2001</td>
<td></td>
</tr>
</tbody>
</table>

**RIFAMPIN**

rifampin capsule

Product Information:

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Item Code (Source)</th>
<th>NDC:51407-323(NDC:61748-018)</th>
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</thead>
<tbody>
<tr>
<td>HUMAN PRESCRIPTION DRUG</td>
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<td>NDC:51407-323(NDC:61748-018)</td>
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<tr>
<td>Route of Administration</td>
<td>ORAL</td>
<td>NDC:51407-323(NDC:61748-018)</td>
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### Active Ingredient/Active Moiety

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>Basis of Strength</th>
<th>Strength</th>
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</thead>
<tbody>
<tr>
<td>RIFAMPIN (UNII: VJT6J7R4TR) (RIFAMPIN - UNII:VJT6J7R4TR)</td>
<td>RIFAMPIN</td>
<td>300 mg</td>
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</tbody>
</table>

### Inactive Ingredients

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<td>SILICON DIOXIDE (UNII: ETJ7Z6XBU4)</td>
<td></td>
</tr>
<tr>
<td>MAGNESIUM STEARATE (UNII: 70097M6D0)</td>
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<tr>
<td>AMMONIA (UNII: 5138Q19F1X)</td>
<td></td>
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<tr>
<td>ISOPROPYL ALCOHOL (UNII: ND2M416302)</td>
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<td>GELATIN, UNSPECIFIED (UNII: 2G86QN327L)</td>
<td></td>
</tr>
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### Product Characteristics

| Color | orange (ORANGE) |
| Score | no score |
| Shape | CAPSULE (CAPSULE) |
| Size | 20mm |
| Flavor | |
| Imprint Code | Rifampin;300;VP;018 |

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<td>100 in 1 BOTTLE, PLASTIC; Type 0: Not a Combination Product</td>
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Labeler - Golden State Medical Supply (603184490)
<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>ID/FEI</th>
<th>Business Operations</th>
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<tbody>
<tr>
<td>Golden State Medical Supply</td>
<td></td>
<td>603184490</td>
<td>relabel(51407-322, 51407-323), repack(51407-322, 51407-323)</td>
</tr>
</tbody>
</table>

Revised: 3/2020

Golden State Medical Supply