

BY-TUBIN Film coated tablets

Isoniazid 75 mg.

Rifampicin 150 mg.

Composition:

Each film coated tablet contains : Isoniazid 75 mg, Rifampicin 150 mg.

Excipients:

tablet core: Pregelatinised maize starch, Maize starch, sodium laurilsulfate, Crospovidone, Magnesium stearate, Talc film-coating: copovidone, Hypromellose, Talc, titanium dioxide, Macrogol 400, Macrogol 6000.

Pharmacodynamics:

Rifampicin and isoniazid are active bactericidal antituberculosis drugs which are particularly active against the rapidly growing extracellular organisms and also have bactericidal activity intracellularly. Rifampicin has activity against slow- and intermittently-growing *M. tuberculosis*.

Rifampicin inhibits DNA-dependent RNA polymerase activity in susceptible cells. Specifically, it interacts with bacterial RNA polymerase but does not inhibit the mammalian enzyme. Cross-resistance to rifampicin has only been shown with other rifamycins.

Isoniazid acts against actively growing tubercle bacilli.

Pharmacokinetics:

Rifampicin

Rifampicin is readily absorbed from the stomach and the duodenum. Peak serum concentrations of the order of 10 µg/ml occur about 2-4 hours after a dose of 10mg/kg body weight on an empty stomach.

In normal subjects the biological half-life of rifampicin in serum averages about 3 hours after a 600mg dose and increases to 5.1 hours after a 900mg dose. With repeated administration, the half-life decreases and reaches average values of approximately 2-3 hours. At a dose of up to 600 mg/day, the half-life does not differ in patients with renal failure and consequently, no dosage adjustment is required.

After absorption, rifampicin is rapidly eliminated in the bile and an entero-hepatic circulation ensues. During this process, rifampicin undergoes progressive deacetylation, so that nearly all the drug in the bile is in this form in about 6 hours. This metabolite retains essentially complete 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. Absorption of rifampicin is reduced when the drug is ingested with food.

Rifampicin is widely distributed throughout the body. It is present in effective concentrations in many organs and body fluids, including cerebrospinal fluid. Rifampicin is about 80 % protein bound. Most of the unbound fraction is not ionized and therefore is diffused freely in tissues.

Isoniazid

After oral administration isoniazid produces peak blood levels within 1 to 2 hours which decline to 50% or less within 6 hours. Ingestion of isoniazid with food may reduce its absorption. It diffuses readily into all body fluids (cerebrospinal, pleural and ascitic fluids), tissues, organs and excreta (saliva, sputum and faeces). From 50 to 70% of a dose of isoniazid is excreted in the urine in 24 hours.

Isoniazid is metabolised primarily by acetylation and dehydrazination. The rate of acetylation is genetically determined.

Pharmacokinetic studies in normal volunteers have been shown that the two ingredients in This drug have comparable bioavailability whether they are given together as individual dose forms or as This drug.

Indications:

This drug is indicated in the treatment of all forms of tuberculosis, including fresh, advanced and chronic cases.

Contraindications:

This drug is contraindicated in:

- patients who are hypersensitive to rifamycins or isoniazid or any of the excipients.
- the presence of jaundice;
- concurrent treatment with the combination of saquinavir/ritonavir.

Warnings and Precautions:

This drug is a combination of 2 drugs, each of which has been associated with liver dysfunction.

All tuberculosis patients should have pre-treatment measurements of liver function.

Adults treated for tuberculosis with This drug should have baseline measurements of hepatic enzymes, bilirubin, serum creatinine, a complete blood count and a platelet count (or estimate).

Patients should be seen at least monthly during therapy and should be questioned specifically about symptoms associated with adverse reactions.

All patients with abnormalities should have follow-up, including laboratory testing, if necessary. However, because there is a higher frequency of isoniazid-associated hepatitis among persons older than 35 years of age, a transaminase measurement should be obtained at baseline and at least monthly during therapy in this age group. Other factors associated with an increased risk of hepatitis include daily use of alcohol, chronic liver disease, intravenous drug use and being a black or Hispanic woman.

Paradoxical drug reaction

After initial improvement of tuberculosis under therapy with This drug, the symptoms may worsen again. In affected patients, clinical or radiological deterioration of existing tuberculous lesions or the development of new lesions have been detected. Such reactions have been observed within the first few weeks or months of initiation of tuberculosis therapy. Cultures are usually negative, and such reactions do not usually indicate treatment failure.

Patients with rare hereditary problems of fructose intolerance, glucose-galactose malabsorption or sucrose- isomaltase insufficiency should not take this medicine.

Severe, systemic hypersensitivity reactions, including fatal cases, such as Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome have been observed during treatment with anti-tuberculosis therapy.

This drug should be discontinued if an alternative etiology for the signs and symptoms cannot be established

Rifampicin

Rifampicin should be given under the supervision of a respiratory or other suitably qualified physician.

Patients with impaired liver function should only be given rifampicin in cases of necessity, and then with caution and under close medical supervision. In these patients, lower doses of rifampicin are recommended and careful monitoring of liver function, especially serum glutamic pyruvic transaminase (SGPT) and serum glutamic oxaloacetic transaminase (SGOT) should initially

be carried out prior to therapy, weekly for two weeks, then every two weeks for the next six weeks. If signs of hepatocellular damage occur, rifampicin should be withdrawn.

Rifampicin should also be withdrawn if clinically significant changes in hepatic function occur.

In some patients, hyperbilirubinaemia can occur in the early days of treatment. Because of the possibility of immunological reaction including anaphylaxis occurring with intermittent therapy (less than 2 to 3 times per week) patients should be closely monitored. Patients should be cautioned against interruption of dosage regimens since these reactions may occur.

Severe cutaneous adverse reactions (SCARs) including Steven-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN), drug reaction with eosinophilia and systemic symptoms (DRESS), acute generalized exanthematous pustulosis (AGEP), which can be life-threatening or fatal, have been reported with a not known frequency in association with This drug treatment.

It is important to note that early manifestations of hypersensitivity, such as fever, lymphadenopathy or biological abnormalities (including eosinophilia, liver abnormalities) may be present even though rash is not evident. If such signs or symptoms are present, the patient should be advised to consult immediately their physician.

If signs and symptoms suggestive of these reactions appear, This drug should be withdrawn immediately and an alternative treatment considered (as appropriate).

Most of these reactions occurred within 2 days to 2 months after treatment initiation; the time to onset can vary depending on the conditions.

Rifampicin has enzyme induction properties that can enhance the metabolism of endogenous substrates including adrenal hormones, thyroid hormones and vitamin D. Isolated reports have associated porphyria exacerbation with rifampicin administration.

Rifampicin 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 have been permanently stained.

Rifampicin may cause vitamin K dependent coagulopathy and severe bleeding (see Section 4.8). Monitoring of occurrence of coagulopathy is recommended for patients at particular bleeding risk. Supplemental vitamin K administration should be considered when appropriate (vitamin K deficiency, hypoprotrombinemia).

Isoniazid

Use of isoniazid should be carefully monitored in patients with current chronic liver disease or severe renal dysfunction.

Severe and sometimes fatal hepatitis associated with isoniazid therapy may occur and may develop even after many months of treatment.

Cases of severe cutaneous reactions including Stevens-Johnson syndrome (SJS) and Toxic Epidermal Necrolysis (TEN), some with a fatal outcome, have been reported with the use of isoniazid. Patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs or symptoms of SJS or TEN (e.g. progressive skin rash often with blisters or mucosal lesions) develops, the patient should be advised to consult immediately their physician. Isoniazid should be permanently discontinued if an alternative etiology for the signs and symptoms cannot be established.

Care should be exercised in the treatment of elderly or malnourished patients who may also require vitamin B6 supplementation with the isoniazid therapy. Use of isoniazid should be carefully monitored in patients with slow acetylator status, epilepsy, history of psychosis, history of peripheral neuropathy, diabetes, alcohol dependence, HIV infection or porphyria.

Drug interaction:

Food Interaction

Isoniazid is an inhibitor of monoamine oxidase (MAO) and diamine oxidase (DAO), therefore can reduce tyramine and histamine metabolism, causing symptoms such as headache, sweating, palpitations, flushing, and hypotension. Patients should be advised against ingesting foods rich in tyramine and/or histamine during treatment with isoniazid, such as cured meat, some cheeses (e.g. matured cheeses), wine, beer and some fish (e.g. tuna, mackerel, salmon).

Interactions with Other Medicinal Products

When This drug is given concomitantly with the combination saquinavir/ritonavir, the potential for hepatotoxicity is increased. Therefore, concomitant use of This drug with saquinavir/ritonavir is contraindicated.

Cytochrome P-450 enzyme interaction

Rifampicin is known to induce and isoniazid is known to inhibit certain cytochrome P-450 enzymes. In general, the impact of the competing effects of rifampicin and isoniazid on the metabolism of drugs that undergo biotransformation through the affected pathways is unknown. Therefore, caution should be used when prescribing This drug with drugs metabolised by cytochrome P-450. To maintain optimum therapeutic blood levels, dosages of drugs metabolised by these enzymes may require adjustment when starting or stopping This drug.

Rifampicin:

The potential for hepatotoxicity is increased with an anaesthetic.

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

The concomitant use of rifampicin with other antibiotics causing vitamin K dependent coagulopathy such as cefazolin (or other cephalosporins with N-methyl-thiothiazole side chain) should be avoided as it may lead to severe coagulation disorders, which may result in fatal outcome (specially with high doses).

Effect of rifampicin on other medicinal products:

Examples of drugs or drug classes affected by This drug:

- Antiarrhythmics (e.g. disopyramide, mexiletine, quinidine, propafenone, tocainide),
- Antiepileptics (e.g. phenytoin),
- Hormone antagonist (antiestrogens e.g. tamoxifen, toremifene, gestronone),
- Antipsychotics (e.g. haloperidol, aripiprazole),
- Anticoagulants (e.g. coumarins),
- Antifungals (e.g. fluconazole, itraconazole, ketoconazole, voriconazole),
- Antivirals (e.g. saquinavir, indinavir, efavirenz, amprevir, nelfinavir, atazanavir, lopinavir, nevirapine),
- Barbiturates,
- Beta-blockers (e.g. bisoprolol, propranolol),

- Anxiolytics and hypnotics (e.g. diazepam, benzodiazepines, zopiclone, zolpidem),
- Calcium channel blockers (e.g. diltiazem, nifedipine, verapamil, nimodipine, isradipine, nicardipine, nisoldipine),
- Antibacterials (e.g. chloramphenicol, clarithromycin, dapsone, doxycycline, fluoroquinolones, telithromycin),
- Corticosteroids,
- Cardiac glycosides (e.g. digitoxin, digoxin),
- Clofibrate,
- Systemic hormonal contraceptives including estrogens and progestogens,
- Antidiabetic (e.g. chlorpropamide, tolbutamide, sulfonylureas, rosiglitazone),
- Immunosuppressive agents (e.g. ciclosporin, sirolimus, tacrolimus)
- Irinotecan,
- Thyroid hormone (e.g. levothyroxine),
- Losartan,
- Analgesics (e.g. methadone, narcotic analgesics),
- Praziquantel,
- Quinine,
- Riluzole,
- Selective 5-HT3 receptor antagonists (e.g. ondansetron)
- Statins metabolised by CYP 3A4 (e.g. simvastatin),
- Theophylline,
- Tricyclic antidepressants (e.g. amitriptyline, nortriptyline),
- Cytotoxics (e.g. imatinib),
- Diuretics (e.g. eplerenone),
- Enalapril: decrease enalapril active metabolite exposure. Dosage adjustments should be made if indicated by the patient's clinical condition
- Hepatitis-C antiviral drugs (eg. daclatasvir, simeprevir, sofosbuvir, telaprevir): Concurrent use of treatment of hepatitis-C antiviral drugs and rifampicin should be avoided.

• Morphine: Plasma concentrations of morphine may be reduced by rifampicin. The analgesic effect of morphine should be monitored and doses of morphine adjusted during and after treatment with rifampicin.

• Clopidogrel: Increases active metabolite exposure. This drug strongly induces CYP2C19, resulting in both an increased level of clopidogrel active metabolite and platelet inhibition, which in particular might potentiate the risk of bleeding. As a precaution, concomitant use of clopidogrel and rifampicin should be discouraged.

Rifampicin treatment reduces the systemic exposure of oral contraceptives. Patients using oral contraceptives should be advised to change to non-hormonal methods of birth control during This drug therapy. Also, diabetes may become more difficult to control.

If p-aminosalicylic acid and rifampicin are both included in the treatment regimen, they should be given not less than eight hours apart to ensure satisfactory blood levels.

Effect of other medicinal products on rifampicin :

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

Other drug interactions with rifampicin :

When the two drugs were taken concomitantly, decreased concentrations of atovaquone and increased concentrations of rifampicin were observed.

Interactions with Isoniazid

The following drugs may interact with isoniazid:

- Antiepileptics (e.g. carbamazepine and phenytoin). There may be an increased risk of distal sensory neuropathy when isoniazid is used in patients taking stavudine.

Concomitant use of zalcitabine with isoniazid has been shown to approximately double the renal clearance if isoniazid in HIV infected patients.

Other Interactions :

Para-aminosalicylic acid may increase the plasma concentration and elimination half-life of isoniazid by competing for acetylating enzymes.

General anaesthetics may increase the hepatotoxicity of isoniazid.

The absorption of isoniazid is reduced by antacids.

The risk of CNS toxicity is increased when isoniazid is given with cycloserine. Isoniazid may reduce plasma concentration of ketoconazole and increase plasma concentration of theophylline.

Interference with laboratory and diagnostic tests:

Therapeutic levels of rifampicin have been shown to inhibit standard microbiological assays for serum folate and Vitamin B12. Thus, alternative assay methods should be considered. Transient elevation of BSP and serum bilirubin has been reported. Rifampicin may impair biliary excretion of contrast media used for visualization of the gallbladder, due to competition for biliary excretion. Therefore, these tests should be performed before the morning dose of rifampicin.

Pregnancy:

Rifampicin

Rifampicin has been shown to be teratogenic in rodents when given in large doses. There are no well controlled studies with This drug in pregnant women. Although rifampicin has been reported to cross the placental barrier and appear in cord blood, the effect of rifampicin, alone or in combination with other antituberculosis drugs, on the human foetus is not known.

When administered during the last few weeks of pregnancy, rifampicin can cause post-natal haemorrhages in the mother and infant, for which treatment with Vitamin K1 may be indicated.

Isoniazid

It has been reported that in both rats and rabbits, isoniazid may exert an embryocardiac effect when administered orally during pregnancy, although no isoniazid-related congenital anomalies have been found in reproduction studies in mammalian species (mice, rats, rabbits).

Therefore, This drug should be used in pregnant women or in women of child bearing potential only if the potential benefit justifies the potential risk to the foetus.

Lactation:

Rifampicin and isoniazid are excreted in breast milk and infants should not be breast fed by a patient receiving This drug unless in the physician's judgement the potential benefit to the patient outweighs the potential risk to the infant.

Effects on ability to drive and use machines:

Isoniazid has been associated with vertigo, visual disorders and psychotic reactions. Patients should be informed of these, and advised that if affected, they should not drive, operate machinery or take part in any activities where



these symptoms may put either themselves or others at risk

Side effects:

Rifampicin:

Common: Thrombocytopenia with or without purpura, usually associated with intermittent therapy, but is reversible if drug is discontinued as soon as purpura occurs, Headache, Dizziness, Nausea, Vomiting, Paradoxical drug reaction (Recurrence or appearance of new symptoms of tuberculosis, physical and radiological signs in a patient who had previously shown improvement with appropriate anti-tuberculosis treatment is called a paradoxical reaction, which is diagnosed after excluding poor compliance of the patient to treatment, drug resistance, side effects of antitubercular therapy, secondary bacterial/fungal infections), Blood bilirubin increased, Aspartate aminotransferase increased, Alanine aminotransferase increased.

Uncommon: Leukopenia, Diarrhea.

Very common: Pyrexia, Chills.

Isoniazid:

Uncommon: Other neurotoxic effects, which are uncommon with conventional doses, are convulsions, toxic encephalopathy, optic neuritis and atrophy, memory impairment and toxic psychosis, Severe and sometimes fatal hepatitis may occur with isoniazid therapy.

Posology and method of administration:

Another antituberculosis drug may be given concurrently with This drug until the susceptibility of the infecting organism to rifampicin and isoniazid has been confirmed.

Adults: Patients should be given the following single daily dose preferably on an empty stomach at least 30 minutes before a meal or 2 hours after a meal: For (150/75 mg):

| Patient body weight (Kg) | Once daily dose |
|--------------------------|-----------------|
| 30-39 | 2 tablets |
| 40-54 | 3 tablets |
| 55-70 | 4 tablets |
| 71 and higher | 5 tablets |

Use in the elderly: Caution should be exercised in such patients especially if there is evidence of liver impairment.

Overdose:

• Signs and Symptoms

Rifampicin

Nausea, vomiting, abdominal pain, pruritus, headache and increasing lethargy will probably occur within a short time after acute ingestion; unconsciousness may occur when there is severe hepatic disease. Transient increases in liver enzymes and/or bilirubin may occur. Brownish-red or orange coloration of the skin, urine, sweat, saliva, tears and faeces will occur, and its intensity is proportional to the amount ingested. Facial or periorbital oedema has also been reported in paediatric patients. Hypotension, sinus tachycardia, ventricular arrhythmias, seizures and cardiac arrest were reported in some fatal cases. 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 g rifampicin. Fatal acute overdoses in adults have been reported with doses ranging from 14 to 60 g. Alcohol or a history of alcohol abuse was involved in some of the fatal and nonfatal reports. Nonfatal overdoses in paediatric patients ages 1 to 4 years old of 100 mg/kg for one to two doses have been reported.

Isoniazid

Isoniazid overdose produces signs and symptoms within 30 minutes to 3 hours after ingestion. Nausea, vomiting, dizziness, slurring of speech, blurring of vision, and visual hallucinations (including bright colours and strange designs) are among the early manifestations. With marked overdose, respiratory distress and CNS depression, progressing rapidly from stupor to profound coma are to be expected, along with severe, intractable seizures. Severe metabolic acidosis, acetonuria and hyperglycaemia are typical laboratory findings.

• Management:

In cases of overdose with This drug, gastric lavage should be performed as soon as possible. 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.

Intensive supportive measures should be instituted, including airway patency, and individual symptoms treated as they arise.

If acute isoniazide overdose is suspected, even in asymptomatic patients, the administration of intravenous pyridoxine (vitamin B6) should be considered. In patients with seizures not controlled with pyridoxine, anticonvulsant therapy should be administered. Sodium bicarbonate should be given to control metabolic acidosis. Haemodialysis is advised for refractory cases; if this is not available, peritoneal dialysis can be used along with forced diuresis.

Storage conditions:

Keep below 30°C, protect from moisture.

Keep out of the reach of children.

Packaging: 3 blister, each contains 10 film-coated tablets/ Carton box.

| TPP2201102 | THIS IS A MEDICAMENT |
|---|----------------------|
| – A medicament is a product but unlike any other products. | |
| – A medicament is a product which affects your health, and its consumption contrary to instructions is dangerous for you. | |
| – Follow strictly the doctor's prescription, the method of use and the instructions of the pharmacist who sold the medicament. The doctor and the pharmacist are experts in medicine, its benefits and risks. | |
| – Do not by yourself interrupt the period of treatment prescribed for you. | |
| – Do not repeat the same prescription without consulting your doctor. | |
| KEEP MEDICAMENTS OUT OF REACH OF CHILDREN (Council of Arab Health Ministers) (Arab Pharmacists Association) | |

Manufactured by:

Hama PHARMA Hama - Syria

Tel.: +963 33 8673941 Fax: +963 33 8673943



