

1.3.1 Summary of Product Characteristics (SmPC)

1.3.1.1 Name of the Medicinal Product

International Non- Proprietary Name (INN): Amoxicillin Sodium for Injection

1.3.1.2 ATC and Forensic Classification

ATC Classification: Antibiotic.

1.3.1.3. Qualitative and quantitative composition

A. Amoxicillin for injection

Each 7ml Vial contains: Amoxicillin Sodium 0.531mg equivalent to Amoxicillin 500mg

B. Water for injection

Reconstituting Solvent . Each ampoule contains 10ml Water for Injection BP

1.3.1.4. Pharmaceutical form

Powder for injection ; A white to almost white powder filled in vial

1.3.1.5. Clinical particulars

1.3.1.5.1 Therapeutic indications

Amoxicillin is indicated in the treatment of infections due to susceptible (ONLY β -lactamase-negative) strains of the designated microorganisms in the conditions listed below:

Infections of the ear, nose, and throat – due to Streptococcus spp. (α - and β -hemolytic strains only), S. pneumoniae, Staphylococcus spp., or H. influenzae.

Infections of the genitourinary tract – due to E. coli, P. mirabilis, or E. faecalis.

Infections of the skin and skin structure – due to Streptococcus spp. (α - and β -hemolytic strains only), Staphylococcus spp., or E. coli.

Infections of the lower respiratory tract – due to Streptococcus spp. (α - and β -hemolytic strains only), S. pneumoniae, Staphylococcus spp., or H. influenzae.

Gonorrhea, acute uncomplicated (ano-genital and urethral infections) – due to N. gonorrhoeae (males and females).

1.3.1.5.2 Posology and method of administration

Amoxicillin is administered by intramuscular or slow intravenous injection in doses of 500 mg every 8 hours. In severe infections 1 g of Amoxicillin may be given every

6 hours by slow intravenous injection over 3 to 4 minutes or by infusion over 30 to 60 minutes. Children up to 10 years of age may be given 50 to 100 mg per kg body-weight daily by injection in divided doses.

1.3.1.5.3 Contraindications

Penicillin hypersensitivity or hypersensitivity to any of the ingredients of this preparation.

A history of allergic reaction to any of the penicillins / cephalosporins.

A history of antibiotic associated colitis.

Infectious mononucleosis.

Patients with lymphatic leukaemia as well as patients suffering from hyperuricaemia, who are being treated with allopurinol, may be at increased risk of developing skin rashes.

Babies, born to hypersensitive mothers, who are still in the neonatal period.

1.3.1.5.4 Special warnings and precautions for use

Amoxicillin should be given with caution to patients with a history of allergy, especially to drugs. Desensitisation may be necessary if treatment is essential.

Amoxicillin should not be used in patients with underlying defects of the urinary tract or for long-term treatment of recurrent urinary tract infection, as resistance may develop in the enteric flora.

Care is necessary if very high doses of amoxicillin are given, especially if renal function is poor, because of the risk of nephrotoxicity. The intrathecal route should be avoided. Care is also necessary if large doses of sodium (as amoxicillin sodium) are given to patients with impaired renal function or heart failure. Renal and haematological status should be monitored during prolonged and high-dose therapy.

Care is required when treating some patients with syphilis because of the Jarisch- Herxheimer reaction.

Contact with amoxicillin should be avoided since skin sensitisation may occur.

Amoxicillin should preferably not be given to patients with undiagnosed pharyngitis (who may have mononucleosis) or patients with lymphatic leukaemia or possibly HIV infection who may also be at increased risk of developing skin rashes with amoxicillin.

1.3.1.5.5 Interaction with other medicinal products and other forms of interaction

Amoxicillin may make certain types of birth control pills less effective.

Drugs known to interact with amoxicillin include: Allopurinol, used to treat gout, high levels of uric acid in the body, and kidney stones , Another drug used to treat gout, called probenecid (Benemid)

Other antibiotics, including chloramphenicol, [sulfonamides](#), macrolides, and [tetracycline](#)

If you are a diabetic and you test your urine for sugar, you should know that taking amoxicillin can affect some urine tests. Ask your doctor about urine testing while on amoxicillin.

Drinking alcohol while taking amoxicillin is generally considered safe, and it won't decrease the effectiveness of amoxicillin. However, taking antibiotics such as amoxicillin may cause an upset stomach, and alcohol can make this and other side effects worse.

1.3.1.5.6 Pregnancy and lactation

Pregnancy

Pregnancy Category B. Animal reproduction studies have failed to demonstrate a risk to the foetus. There are no adequate and well controlled studies in pregnant women. Reproduction studies have been performed in mice and rats at doses up to 10 times the human dose and have revealed no evidence of impaired fertility or harm to the fetus due to amoxicillin. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers

Penicillins have been shown to be excreted in human milk. Amoxicillin use by nursing mothers may lead to sensitization of infants. Caution should be exercised when amoxicillin is administered to a nursing woman.

1.3.1.5.7 Effects on ability to drive and use machines

Adverse effects on the ability to drive and operate machinery have not been observed.

1.3.1.5.8 Undesirable effects

The most common adverse effects are sensitivity reactions including urticaria, maculopapular rashes (often appearing more than seven days after commencing treatment), fever, joint pains and angioedema. Anaphylaxis occasionally occurs and has sometimes been fatal. Late sensitivity reactions may include serum sickness-like reactions, haemolytic anaemia and acute interstitial nephritis.

Other adverse effects are generally associated with large intravenous doses of amoxicillin or impaired renal function. These include transient leucopenia and thrombocytopenia, haemolytic anaemia and neutropenia (which might have some immunological basis); prolongation of bleeding time and defective platelet function; convulsions and other signs of central nervous system toxicity (encephalopathy has been reported following intrathecal administration and can be fatal); electrolyte disturbances due to administration of large amounts of sodium. Most patients with infectious mononucleosis develop a maculopapular rash when treated with amoxicillin, and patients with other lymphoid disorders such as lymphatic leukaemia also appear to be at higher risk.

Some patients with syphilis may experience a Jarisch-Herxheimer reaction shortly after treatment is started. Symptoms include fever, chills, headache and reaction at the site of lesions.

The reaction can be dangerous in cardiovascular syphilis or where there is a serious risk of increased local damage such as with optic atrophy.

Gastrointestinal effects (diarrhoea and nausea) reported with amoxicillin commonly occur after oral administration, not parenteral administration. Pseudomembranous colitis has been reported with most antibiotics.

Erythema multiforme (including Stevens-Johnson syndrome, toxic epidermal necrolysis, exfoliative dermatitis, hepatitis and cholestatic jaundice have been reported with combined amoxicillin and clavulanic acid therapy.

1.3.1.5.9 Overdose

If encountered, gastro-intestinal symptoms and disturbance of the fluid and electrolyte balance may be evident. They may be treated symptomatically and supportive with attention to the water/electrolyte balance. In the absence of an adequate fluid intake and urinary output, crystalluria is a possibility and the antibiotic may be removed from the circulation by haemodialysis.

Oral administration can cause gastro-intestinal symptoms such as transient diarrhoea, nausea and colic which are dose related and a result of local irritation not toxicity.

1.3.1.6 Pharmacological properties

1.3.2.6.1 Pharmacodynamic properties

Pharmacotherapeutic group: penicillins with extended spectrum; ATC code: J01CA04.

Mechanism of Action :

Amoxicillin is a semi-synthetic aminopenicillin of the beta-lactam group of antibiotics. It has a broad spectrum of antibacterial activity against many Gram-positive and Gram-negative micro-organisms, acting through the inhibition of biosynthesis of cell wall mucopeptide. Amoxicillin is, however, susceptible to degradation by beta-lactamases and therefore the spectrum of activity does not include organisms which produce these enzymes including resistant staphylococci, and all strains of Pseudomonas, Klebsiella and Enterobacter.

Pharmacodynamic Effects:

The prevalence of acquired resistance is geographically and time dependant and for select species may be very high. Local information on resistance is desirable, particularly when treating severe infections.

In vitro susceptibility of micro-organisms to Amoxicillin:

Where clinical efficacy of amoxicillin has been demonstrated in clinical trials this is indicated with an asterisk (*).

†Natural intermediate susceptibility in the absence of acquired mechanism of resistance.

Commonly Susceptible Species :

Gram-positive aerobes: Bacillus anthracis; Enterococcus faecalis* ; Beta-hemolytic streptococci* ; Listeria monocytogenes;

Gram-negative aerobes: Bordetella pertussis

Other: *Leptospira icterohaemorrhagiae* ; *Treponema pallidum*

Species for which acquired resistance may be a problem :

Gram-negative aerobes: *Escherichia coli** ; *Haemophilus influenzae**; *Helicobacter pylori** ; *Proteus mirabilis** ; *Salmonella* spp.; *Shigella* spp.; *Neisseria gonorrhoeae**; *Pasteurella* spp.; *Vibrio cholerae*

Gram-positive aerobes: Coagulase negative staphylococcus*;

Corynebacterium spp.; *Staphylococcus aureus* * ; *Streptococcus pneumoniae** ; Viridans group streptococcus*;

Gram-positive anaerobes: *Clostridium* spp. ;

Gram-negative anaerobes: *Fusobacterium* spp.

Other: *Borrelia burgdorferi*

Inherently resistant organisms:

Gram-positive aerobes: *Enterococcus faecium*†

Gram-negative aerobes: *Acinetobacter* spp.; *Enterobacter* spp.; *Klebsiella* spp. ; *Pseudomonas* spp. ;

Gram-negative anaerobes: *Bacteroides* spp. (many strains of *Bacteroides fragilis* are resistant).

Others: *Chlamydia* spp. ; *Mycoplasma* spp.; *Legionella* spp.

1.3.1.6.2 Pharmacokinetic properties

Distribution : Amoxicillin is not highly protein bound, approximately 18% of total plasma drug content is bound to protein. Amoxicillin diffuses readily into most body tissues and fluids, with the exception of the brain and spinal fluid. Inflammation generally increases the permeability of the meninges to penicillins and this may apply to amoxicillin.

Elimination: The major route of elimination for amoxicillin is via the kidney. Approximately 60 to 70% of amoxicillin is excreted unchanged in urine during the first six hours after administration of a standard dose. The elimination half-life is approximately one hour. Amoxicillin is also partly excreted in the urine as the inactive penicilloic acid in quantities equivalent to 10 to 25% of the initial dose. Concurrent administration of probenecid delays amoxicillin excretion. Small amounts of the drug are also excreted in faeces and bile.

1.3.1.6.3 Preclinical safety data

No further information of relevance to add.

1.3.1.7 Pharmaceutical Particulars

1.3.1.7.1 Incompatibilities

Amoxicillin should not be mixed with blood products, other proteinaceous fluids such as protein hydrolysates or with intravenous lipid emulsions. If prescribed concurrently with an aminoglycoside, the antibiotics should not be mixed in the syringe, intravenous fluid container or giving set because of loss of activity of the aminoglycoside under these conditions. Amoxicillin solutions should not be mixed with infusions containing glucose, dextran or bicarbonate.

1.3.1.7.2 Shelf life: 36 Months

1.3.1.7.3 Special precautions for storage :

Store below 30°C. Protect from light.

1.3.1.7.4 Nature and contents of container

Amoxicillin Sodium packed in 7 ml clear glass vial USP Type-III. 10 such labeled vials packed in 1 box . or , 1 vial be packed in a plastic tray with Water for Injection BP 5 ml in clear glass USP-I ampoule), One such tray to be packed in a printed inner box with packing insert..

1.3.1.7.5 Special precautions for disposal

All solutions should be shaken vigorously before injection and administered within 15 minutes of reconstitution. Any residual antibiotic solution should be discarded. Amoxicillin vials are not suitable for multi-dose use.

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

1.3.1.8. Marketing authorisation holder

Ningbo Voice Biochemic Co., Ltd.

298 West Zhonghsan Road, Ningbo . P.R. China