Bosch For Medical Professional Only

Amkay® (Amikacin) IM / IV Injection

ایمکے انجکشن
(امیکاسین)

Description:
The active ingredient in Amkay is amikacin sulfate USP, an aminoglycoside antibacterial. Its chemical name is D-Streptamine, O-3-amino-3-deoxy-α-Dglucopyranosyl-(1→6)-O-[6-amino-6-deoxy-α-D-glucopyranosyl-(1→4)]-N1 -(4-amino-2-hydroxy-1¬ oxobutyl)-2-deoxy-, (S)-, sulfate (1:2) salt with a chemical formula of $C_{22}H_{43}N_5O_{13}$•$2H_2SO_4$ with a molecular weight of 781.76.

Composition:
Each Amkay 25mg ampoule contains:
Amikacin..... 25 mg as Amikacin Sulfate U.S.P.
(Product Specs.: U.S.P.)

Each Amaky 50mg ampoule contains:
Amikacin..... 50 mg as Amikacin Sulfate U.S.P.
(Product Specs.: U.S.P.)

Each Amkay 100mg ampoule contains:
Amikacin..... 100 mg as Amikacin Sulfate U.S.P.
(Product Specs.: U.S.P.)

Each Amkay 250mg ampoule contains:
Amikacin..... 250 mg as Amikacin Sulfate U.S.P.
(Product Specs.: U.S.P.)

Each Amkay 500mg ampoule contains:
Amikacin..... 500 mg as Amikacin Sulfate U.S.P.
(Product Specs.: U.S.P.)

Clinical Pharmacology:
Pharmacodynamic Properties:
Pharmacotherapeutic group: semi-synthetic aminoglycoside antibiotic ATC code: J01G B06

Mechanism Of Action:
Aminoglycoside antibiotics are bactericidal in action. Although the exact mechanism of action has not been fully elucidated, the drugs appear to inhibit protein synthesis in susceptible bacteria by irreversibly binding to 30S ribosomal subunits.

Microbiology:
Gram-Positive Bacteria:
Staphylococcus aureus
Streptococcus pyogenes
Enterococci pneumoniae
Diplococcus pneumoniae

Gram-Negative Bacteria:
Pseudomonas aeruginosa
Escherichia coli
Klebsiella
Enterobacter
Serratia spp
Minea-Herralae
Citrobacter freundii
Salmonella
Shigella
Acinetobacter spp
Providencia spp
Proteus spp

Pharmacokinetic Properties
Amikacin is rapidly absorbed after intramuscular injection. Peak plasma concentrations equivalent to about 20 mg/ml are achieved one hour after IM doses of 500 mg, reducing to about 2 µg/ml 10 hours after injections. Twenty per cent or less is bound to serum protein and serum concentrations remain in the bactericidal range for sensitive organisms for 10 to 12 hours. Single doses of 500 mg administered as an intravenous infusion over a period of 30 minutes produce a mean peak serum concentration of 38 µg/ml. Repeated infusions do not produce drug accumulation in adults with normal renal function. However, decreased renal function will lead to accumulation.

In adults with normal renal function the plasma elimination half-life of amikacin is usually 2-3 hours. 94 - 98% of a single IM or IV dose of amikacin is excreted unchanged by glomerular filtration within 24 hours. Urine concentrations of amikacin average 563 µg/ml in the first 6 hours following a single 250 mg IM dose and 163 µg/ml over 6-12 hours. Following a single 500 mg IM dose urine concentrations average 832 µg/ml in adults with normal renal function.

Amikacin diffuses readily through extracellular fluids and is excreted in the urine unchanged,

primarily by glomerular filtration. It has been found in pleural fluid, amniotic fluid and in the peritoneal cavity following parenteral administration. Spinal fluid levels in normal infants are approximately 10 to 20% of the serum concentrations and may reach 50% in meningitis.

In neonates and particularly in premature babies, the renal elimination of amikacin is reduced. Amikacin was administered intramuscularly and/or intravenously at a dose of 7.5 mg/kg. Clearance in neonates >3000 g was 0.84 ml/min/kg and terminal half-life was about 7 hours. The initial volume of distribution and volume of distribution at steady state was 0.3 ml/kg and 0.5 mg/kg, respectively. With lower birth weight clearance/kg was lower and half-life longer.

Therapeutic Indications:

Amikacin is indicated in the short-term treatment of serious infections due to susceptible strains of Gram-negative bacteria, including Pseudomonas species. Although amikacin is not the drug of choice for infections due to staphylococci, at times it may be indicated for the treatment of known or suspected staphylococcal disease. These situations include: the initiation of therapy for severe infections when the organisms suspected are either Gram-negative or staphylococci, patients allergic to other antibiotics, and mixed staphylococcal/Gram-negative infections.

Dosage And Administration:

Amikacin sulphate injection may be given intramuscularly or intravenously.

Amikacin should not be physically premixed with other drugs, but should be administered separately according to the recommended dose and route.

The patient's pre-treatment bodyweight should be obtained for calculation of correct dosage. The status of renal function should be estimated by measurement of the serum creatinine concentration or calculation of the endogenous creatinine clearance rate. It is desirable to measure both peak and trough serum concentrations intermittently during therapy. Peak concentrations (30-90 minutes after injection) above 35 mcg/ml and trough concentrations (just prior to the next dose) above 10 mcg/ml should be avoided. For most infections the intramuscular route is preferred, but in life-threatening infections, or in patients in whom intramuscular injection is not feasible, the intravenous route, either slow bolus (2 to 3 minutes) or infusion (0.25% over 30 minutes) may be used.

Adults And Children Over 12 Years:

The recommended intramuscular or intravenous dosage for adults and adolescents with normal renal function (creatinine clearance ≥50 ml/min) is 15 mg/kg/day which may be administered as a single daily dose or divided into 2 equal doses i.e. 7.5 mg/kg q 12 h. The total daily dose should not exceed 1.5 g. In endocarditis and in febrile neutropenic patients, dosing should be twice daily.

Children 4 weeks to 12 year:

The recommended intramuscular or intravenous (slow intravenous infusion) dose in children with normal renal function is 15-20 mg/kg/day which may be administered as 15-20 mg/kg, once a day; or as 7.5 mg/kg q 12 h. In endocarditis and in febrile neutropenic patients dosing should be twice daily.

Neonates:

An initial loading dose of 10 mg/kg followed by 7.5 mg/kg q 12 h.

Premature Infants:

The recommended dose in prematures is 7.5 mg/kg in every 12 hours. The total daily dose by all routes of administration should not exceed 15-20 mg/kg/day. Infants should receive a 1 to 2 hour infusion.

Elderly:

Amikacin is excreted by the renal route, renal function should be assessed whenever possible and dosage adjusted as described under impaired renal function.

Impaired renal function:

For patients with impaired renal function receiving usual twice or three times daily dosing, whenever possible, serum amikacin concentrations should be monitored by appropriate assay procedures. Doses should be adjusted either by administering normal doses at prolonged intervals or by administering reduced doses at fixed intervals.

Intraperitoneal use

Amikacin may be used as an irrigant after recovery from anaesthesia in concentrations of 0.25% (2.5 mg/ml). The intraperitoneal use of amikacin is not recommended in young children.

Contraindications:

Amikacin sulphate injection is contraindicated in patients with:

- Known allergy to amikacin or any component of the formulation.
- History of hypersensitivity or serious toxic reactions to aminoglycosides
- Myasthenia gravis.

Warnings And Precautions:

Patients should be well hydrated during amikacin therapy. Caution should be applied to patients with pre-existing renal insufficiency, pre-existing hearing or vestibular damage and diminished glomerular filtration. Macular infarction sometimes leading to permanent loss of vision has been reported following intravitreous administration (injection into the eye) of amikacin.

Renal Toxicity

Renal and eighth-cranial nerve function should be closely monitored especially in patients with known or suspected renal impairment at the onset of therapy. Blood urea nitrogen, serum creatinine, or creatinine clearance should be measured periodically. Serial audiograms should be obtained where feasible in patients old enough to be tested. Evidence of ototoxicity (dizziness, vertigo, tinnitus, roaring in the ears, and hearing loss) or nephrotoxicity requires discontinuation of the drug or dosage adjustment.

Neuro/Ototoxicity

Neurotoxicity, manifested as vestibular and/or bilateral ototoxicity, can occur in patients treated with aminoglycosides. The risk of aminoglycoside-induced ototoxicity is greater in patients with impaired renal function. Patients developing cochlear or vestibular damage may not have symptoms during therapy to warn them of developing eighth nerve toxicity, and total or partial irreversible bilateral deafness or disabling vertigo may occur after the drug has been discontinued. Aminoglycoside-induced ototoxicity is usually irreversible.

Neuromuscular Toxicity

Neuromuscular blockade and respiratory paralysis have been reported following parenteral injection, topical instillation, and following oral use of aminoglycosides. The possibility of respiratory paralysis should be considered if aminoglycosides are administered by any route. Aminoglycosides should be used with caution in patients with muscular disorders such as Parkinsonism since these drugs may aggravate muscle weakness because of their potential curare-like effect on the neuromuscular junction.

Drug Interactions:

The concurrent or serial use of other neurotoxic, ototoxic or nephrotoxic agents, particularly

bacitracin, cisplatin, amphotericin B, ciclosporin, tacrolimus, cephaloridine, paromomycin, viomycin, polymyxin B, colistin, vancomycin, or other aminoglycosides should be avoided either systemically or topically because of the potential for additive effects. Concomitant cephalosporin use may spuriously elevate creatinine serum level determinations. Here is an increased risk of hypocalcaemia when aminoglycosides are administered with bisphosphonates.

There is an increased risk of nephrotoxicity and possibly of ototoxicity when aminoglycosides are administered with platinum compounds.Concomitantly administered thiamine (vitamin B1) may be destroyed by the reactive sodium bisulfite component of the amikacin sulfate formulation.
The intraperitoneal use of amikacin is not recommended in patients under the influence of anaesthetics or muscle-relaxing drugs (including ether, halothane, d-tubocurarine, succinylcholine and decamethonium) as neuromuscular blockade and consequent respiratory depression may occur.
Indomethacin may increase the plasma concentration of amikacin in neonates.

Adverse Effects:
Uncommon: Superinfections or colonisation with resistant bacteria or yeast, Nausea, vomiting, Rash

Rare: Anaemia, eosinophilia, Hypomagnesaemia, Tremor, paresthesia, headache, balance disorder, Blindness, retinal infarction, Tinnitus, hypoacusis, Hypotension, Pruritus, urticaria, Arthralgia, muscle twitching, Oliguria, blood creatinine increased, albuminuria, azotemia, red blood cells urine, white blood cells urine, Pyrexia.

Not Known: Anaphylactic response (anaphylactic reaction, anaphylactic shock and anaphylactoid reaction), hypersensitivity, Paralysis, Deafness, deafness neurosensory, Apnoea, bronchospasm. Renal failure acute, nephropathy toxic, cells in urine.

Use In Pregnancy And Lactation:
Pregnancy:
The safety of amikacin in pregnancy has not yet been established. Amikacin should be administered to pregnant women and neonatal infants only when clearly needed and under medical supervision.

Lactation:
It is not known whether amikacin is excreted in human milk. A decision should be made whether to discontinue breast-feeding or to discontinue therapy.

Overdose:
In case of overdosage there is a general risk for nephro-, oto- and neurotoxic (neuromuscular blockage) reactions. Neuromuscular blockage with respiratory arrest needs appropriate treatment including application of ionic calcium. In the event of overdosage or toxic reaction, peritoneal dialysis or haemodialysis will aid in the removal of amikacin from the blood. Amikacin levels are also reduced during continuous arteriovenous hemofiltration. In the newborn infant, exchange transfusion may also be considered.

Incompatibilities:
Amikacin is incompatible with some penicillin's and cephalosporins, amphotericin chlorothiazide sodium, erythromycin gluceptate, heparin, nitrofurantoin sodium, phenytoin sodium, thiopentone sodium and warfarin sodium, and depending on the composition and strength of the vehicle, tetracyclines, vitamins of the B group with vitamin C, and potassium chloride. amikacin should not be physically mixed with other antibacterial agents in syringes, infusion bottles or any other equipment. Each agent should be administered separately.

Shelf Life
3 Years

Storage and Instructions:
Protect from heat & sunlight, store at room temperature 15°C-30°C.
The expiration date refer to the product correctly stored at the required condition.
Keep out of the reach of children.
With the passage of time injection may become pale yellow, this does not indicate decrease in potency.
Precautions: Do not use if injection is leaking, solution is cloudy or contains un-dissolved particles.
Patients and healthcare professionals can also report suspected adverse drug reaction at ade@bosch-pharma.com.
To be sold on prescription of a registered medical practitioner only.

Presentation:
Amkay 25mg/ml Injection: Pack of 5's ampoules.
Amkay 50mg/ml Injection: Pack of 5's ampoules.
Amkay 100mg/2ml Injection: Pack of 5's ampoules.
Amkay 250mg/2ml Injection: Pack of 1's ampoules.
Amkay 500mg/2ml Injection: Pack of 1's ampoules.

پٹھوں/وریدی استعمال کے لئے۔
خوراک: ڈاکٹر کی ہدایت کے مطابق استعمال کریں۔
ہدایات:-
دھوپ اور گرمی سے محفوظ کمرے کے درجہ حرارت ۱۵-۳۰ ڈگری سینٹی گریڈ پر رکھیں۔
بچوں کی پہنچ سے دُور رکھیں۔
وقت گزرنے کے ساتھ انجکشن گہرا پیلا پڑسکتا ہے لیکن اس سے دوا کی پوٹینسی میں کمی نہیں آتی۔
احتیاط: انجکشن لیک ہونے، دُھندلا ہونے یا اس میں کوئی غیر حل پذیر شے نظر آنے کی صورت میں ہرگز استعمال نہ کریں۔ صرف مستند ڈاکٹر کے نسخے پر فروخت کریں۔

Manufactured by:
Bosch Pharmaceuticals (Pvt) Ltd.
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Karachi - Pakistan

Bosch

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(Amikacin)

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(امیکاسین)

FIRST & ONLY CERTIFIED HALAAL

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PHARMACEUTICAL COMPANY