angioedema, a history of peptic ulceration or gastrointestinal bleeding, in patients with moderate or severe renal impairment, and in those with hypovolaemia or dehydration. Ketorolac should not be given to patients with coagulation or haemorrhagic disorders or those with confirmed or suspected cerebrovascular bleeding. It is contra-indicated as a prophylactic analgesic before surgery and for intraoperative use because of its inhibitory effects on platelets; it should also not be given postoperatively to those who have undergone procedures with a high risk of haemorrhage. The total daily dose of ketorolac should be reduced in the elderly and in patients weighing less than 50 kg. It is recommended that patients with mild renal impairment should receive a reduced dose of ketorolac and undergo close monitoring of renal function. Ketorolac should be used with caution in heart failure, hepatic impairment, and conditions leading to reduction in blood volume or in renal blood flow. Ketorolac should be withdrawn if clinical symptoms of hepatotoxicity develop. Drowsiness and dizziness may affect the performance of skilled tasks such as driving.

INTERACTIONS

For interactions associated with NSAIDs, Ketorolac should not be given to patients already receiving anticoagulants or to those who will require prophylactic anticoagulant therapy, including low-dose heparin. The risk of ketorolac-associated bleeding is also increased by other NSAIDs or aspirin and by pentoxifylline and use together should be avoided. Probenecid increases the half-life and plasma concentrations of ketorolac and the two drugs should not be given together. Parasympathomimetic.

ADVERSE EFFECTS AND TREATMENT

As for NSAIDs in general. Concern over the high incidence of reported adverse effects with ketorolac tromethamine has led to its withdrawal in some countries while in others its permitted dosage and maximum duration of treatment have been reduced. Adverse effects reported include gastrointestinal disturbances including gastrointestinal bleeding (especially in the elderly), perforation, and peptic ulceration. Hypersensitivity reactions such as anaphylaxis, rash, bronchospasm, laryngeal oedema, and hypotension have also occurred. Other adverse effects reported include drowsiness, dizziness, headache, mental and sensory changes, psychotic reactions, sweating, dry mouth, thirst, fever, convulsions, myalgia, aseptic meningitis, hypertension, dyspnoea, pulmonary oedema, bradycardia, chest pain, palpitations, fluid retention, increases in blood urea and creatinine, acute renal failure, oedema, hyponatraemia, hyperkalaemia, urinary frequency or retention, nephrotic syndrome, flank pain with or without haematuria, purpura, thrombocytopenia, epistaxis, inhibition of platelet aggregation, increased bleeding time, postoperative wound haemorrhage, haematoma, flushing or pallor, and pancreatitis. Severe skin reactions including Stevens-Johnson syndrome and Lyell's syndrome have been reported. Liver function changes may occur; hepatitis and liver failure have been reported. There may be pain at the site of injection. The most frequently reported adverse effects of ketorolac intranasal spray were mild and transient local reactions such as nasal discomfort or irritation.

Warning: - Ketorolac tromethamine, a nonsteroidal anti-inflammatory drug (NSAID), is indicated for the short-term (up to 5 days in adults) management of moderately severe acute pain that requires analgesia at the opioid level. Oral ketorolac tromethamine is indicated only as continuation treatment following IV or IM dosing of ketorolac tromethamine, if necessary. The total combined duration of use of oral ketorolac tromethamine and ketorolac tromethamine injection should not exceed 5 days. Ketorolac tromethamine is not indicated for use in paediatric patients and it is NOT indicated for minor or chronic painful conditions. Increasing the dose of ketorolac tromethamine beyond the label recommendations will not provide better efficacy but will increase the risk of developing serious adverse events.

Pregnancy: - In late pregnancy, as with other NSAIDs, ketorolac tromethamine should be avoided because it may cause premature closure of the ductus arteriosus.

Pregnancy Category C Reproduction studies have been performed during organogenesis using daily oral doses of ketorolac tromethamine tablets at 3.6 mg/kg (0.37 times the human AUC) in rabbits and at 10 mg/kg (1.0 times the human AUC) in rats. Results of these studies did not reveal evidence of teratogenicity to the foetus. However, animal reproduction studies are not always predictive of human response

OVERDOSAGE:

Signs and Symptoms: Overdoses of ketorolac tromethamine have been variously associated with abdominal pain, nausea, vomiting, hyperventilation, peptic ulcers and/or erosive gastritis, gastrointestinal bleeding, and renal dysfunction which have generally resolved after discontinuation of dosing. Metabolic acidosis has been reported following intentional overdosage. Although rare, hypertension, acute renal failure, respiratory depression, coma and death have been reported after significant overdose of NSAIDs. Anaphylactoid reactions have been reported with therapeutic ingestion of NSAIDs and may occur following an overdose. In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused pain and peptic ulcers which resolved after discontinuation of dosing.

Treatment: Patients should be managed by symptomatic and supportive care following overdose. There are no specific antidotes. Dialysis does not significantly clear ketorolac from the bloodstream. *For management of a suspected drug overdose, contact your regional poison control centre*.

Storage: - Store protect from light at a temperature not exceeding 30°C.

Not to be refrigerated

Improper Storage may deteriorate the product

Medicine: - Keep out of reach of children.

Presentation:- 1 ml Ampoule pack in a 5x2 Blister strip & 20 Strips pack in a outer pack

Manufactured by:

AMERICAN REMEDIES
Care & Cure with Research
American Remedies Healthcare Pvt. Ltd.
(An ISO 9001-2015 Certified Company)

ICO: American Remedies LLC, DE, USA
Gala No. 105 to 111, 1st Flr., Bldg. No. E-15/A, Harihar Complex, Bhiwandi, Mumbai - 421302
At: Vill. Surajpur Nahan Road Paonta Sahib, Distt. Sirmour, Himachal Pradesh-173001
E-mail: info@americanremedies.in
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For the use only of a Registered Medical Practitioner or a Hospital or a Laboratory

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Ketorolac Tromethamine Injection IP

AMERICAN Ketrocan Injection 30

For IM/IV Use only

Composition:-

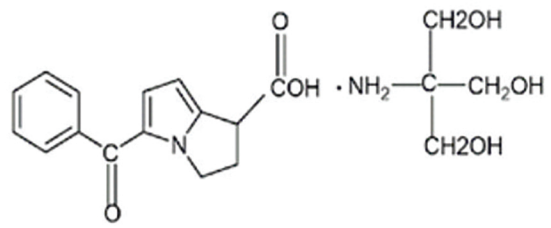
Each ml Contains:-

Ketorolac Tromethamine	IP	30 mg
Water for Injection	IP	q.s

DESCRIPTION: -

Ketorolac tromethamine is a member of the pyrrole-pyrrole group of nonsteroidal anti-inflammatory drugs (NSAIDs), The sterile solutions are clear and slightly yellow in colour. The chemical name for ketorolac tromethamine is (±)-5-benzoyl- 2,3-dihydro-1H-pyrrolizine-1-carboxylic acid, compound with 2-amino- 2-(hydroxymethyl)-1,3-propanediol. Ketorolac tromethamine is available for intravenous (IV) or intramuscular (IM) administration.

Ketorolac tromethamine is a racemic mixture of [-]S and [+]R ketorolac tromethamine. The molecular weight of ketorolac tromethamine is 376.41. and The structural formula is



PHARMACOLOGY

PHARMACOKINETICS

Ketorolac tromethamine is absorbed after intramuscular or oral doses. At physiological pH ketorolac tromethamine dissociates to form an anionic ketorolac molecule which is less hydrophilic than the tromethamine salt. Peak plasma concentrations of ketorolac occur within about 30 to 60 minutes; absorption after intramuscular injection may be slower than that after oral doses in some individuals. Ketorolac is over 99% bound to plasma proteins. It does not readily penetrate the blood-brain barrier. Ketorolac crosses the placenta and small amounts of drug are distributed into breast milk. The terminal plasma half-life is about 4 to 6 hours, but is about 6 to 7 hours in the elderly and 9 to 10 hours in patients with renal dysfunction. The major metabolic pathway is glucuronic acid conjugation; there is 1 some para-hydroxylation. About 90% of a dose is excreted
in urine as unchanged drug and conjugated and hydroxylated metabolites, the remainder is excreted in the faeces.

DOSAGE AND ADMINISTRATION

Ketorolac, a pyrrolizine carboxylic acid derivative structurally related to indometacin, is an NSAID. It is used mainly as an analgesic. Ketorolac is used intramuscularly, intravenously, or orally as the tromethamine salt in the short-term management
of moderate to severe postoperative pain. However, it should be noted that because of concerns over the high incidence of reported adverse effects with ketorolac its dosage and maximum duration of use are restricted. The recommended maximum duration for parenteral therapy is 2 days in the UK; if required, patients should be transferred to oral therapy with another analgesic. In the USA it is recommended that the maximum combined duration of use of parenteral and oral ketorolac should not exceed 5 days.

In the UK the recommended initial dose by the parenteral route is 10 mg of ketorolac tromethamine followed by 10 to 30 mg every 4 to 6 hours as required, although ketorolac may be given as often as every 2 hours in the initial postoperative period if required. The total maximum daily dose is 90 mg (60 mg in the elderly, patients with mild renal impairment, and in those weighing less than 50 kg). Intravenous injections should be given over at least 15 seconds.

Regimens in use in the USA include a single intramuscular dose of 60 mg or a single intravenous dose of 30 mg, or a multiple- dose regimen comprising 30 mg every 6 hours intramuscularly or intravenously, up to a maximum of 120 mg daily. These doses should be halved in the elderly (aged 65 years or older), the renally impaired, and those weighing less than 50 kg.

In the USA ketorolac tromethamine may also be given orally as continuation therapy from parenteral dosing. The recommended dose is 20 mg (10 mg in the elderly, the renally impaired, and those weighing under 50 kg), followed by 10 m g every 4 to 6 hours t o a maximum of 40 mg daily.

In the USA, ketorolac tromethamine is also approved for the short-term management of moderate to moderately severe acute pain as an intranasal spray. It is recommended that the maximum duration of use either alone or with other ketorolac preparations should not exceed 5 days; it should not be used at the same time as other ketorolac preparations. The recommended dose is 15 .75 mg in each nostril every 6 to 8 hours to a total maximum daily dose of 126 mg. In patients aged 65 years or older, the renally impaired, and those weighing less than 50 kg, the recommended dose is 15 .75 mg in one nostril every 6 to 8 hours to a total maximum daily dose of 63 mg.

PRECAUTIONS

As for NSAIDs in general. In light of the concern over its toxicity, licensed product information for ketorolac recommends that it should not be used during pregnancy or labour, nor given to mothers who are breast feeding (but see below). Ketorolac is contra-indicated in patients with a history of hypersensitivity to aspirin or other NSAIDs, a history of asthma, nasal polyps, bronchospasm, or