Injefer®

Ferric Carboxymaltose

Description: Ferric carboxymaltose is a colloidal iron (III) hydroxide complex with carboxymaltose, a carbohydrate polymer that releases iron. Ferric carboxymaltose solution is a dark brown, non-transparent and aqueous solution.

Mode of action: Ferric carboxymaltose (FCM) solution for injection/infusion contains iron in a stable ferric state as a complex with a carbohydrate polymer designed to provide iron for the iron transport and storage proteins in the body (transferrin and ferritin). FCM is effective in increasing haemoglobin (Hb) and serum ferritin concentrations in patients with mild to moderate iron-deficiency anemia.

Composition
Injefer® 100 IV: Each 2 ml solution contains Ferric carboxymaltose INN equivalent to elemental Iron 100 mg.
Injefer® 500 IV: Each 10 ml solution contains Ferric carboxymaltose INN equivalent to elemental Iron 500 mg.
Injefer® 1 gm IV: Each 20 ml solution contains Ferric carboxymaltose INN equivalent to elemental Iron 1 gm.

Indications: Ferric carboxymaltose is indicated for the treatment of iron deficiency anemia in adult patients:
- Who have intolerance to oral iron or have had unsatisfactory response to oral iron;
- Who have non-dialysis dependent chronic kidney disease

Dosage & administration: The cumulative dose for repletion of iron using Ferric carboxymaltose is determined based on the patient's body weight and haemoglobin (Hb) level and must not be exceeded. The following table (Table 1) should be used to determine the cumulative iron dose:

Table 1: Determination of the cumulative iron dose

Hb (g/dL)	Patients with body weight 35 kg to <70 kg	Patients with body weight ≥70 kg
<10	1,500 mg	2,000 mg
≥10	1,000 mg	1,500 mg

Note: A cumulative iron dose of 500 mg should not be exceeded for patients with a body weight <35 kg.

For overweight patients, a normal body weight/blood volume relationship should be assumed when determining the iron requirement.
For patients with a Hb Value ≥14 g/dL, an initial dose of 500 mg iron should be given and iron parameters should be checked prior to repeat dosing.
Post repletion, regular assessments should be completed to ensure that iron levels are corrected and maintained.

Maximum tolerated single dose: A single dose Ferric carboxymaltose should not exceed 1,000 mg of iron per day. Do not administer 1,000 mg of iron more than once a week.
Intravenous injection
Ferric carboxymaltose may be administered by intravenous injection using undiluted solution up to 1,000 mg iron (up to a maximum of 15 mg/kg body weight). For doses up to 200 mg iron, there is no prescribed administration time. For doses greater than 200 mg and up to 500 mg iron, Injefer should be administered at a rate of 100 mg/min. For doses greater than 500 mg and up to 1,000 mg iron Injefer should be administered over 15 minutes.
Intravenous infusion
Ferric carboxymaltose may be administered by intravenous infusion up to a maximum single dose of 1,000 mg of iron (up to a maximum of 20 mg/kg body weight).

Method of administration: Ferric carboxymaltose must be administered only by the intravenous route: by bolus injection, or during a haemodialysis session undiluted directly into the venous limb of the dialyser, or by infusion. In case of infusion Injefer must be diluted only in sterile 0.9% m/v sodium chloride solution as shown in Table 2 below.

Table 2: Dilution plan of Injefer for intravenous infusion

Injefer®	Iron	Maximum amount of sterile 0.9% sodium chloride solution	Minimum administration time
2 to 4 mL	100 to 200 mg	50 mL	-
>4 to 10 mL	>200 to 500 mg	100 mL	6 minutes
>10 to 20 mL	>500 to 1000 mg	250 mL	15 minutes

Note: For stability reasons, dilution to concentrations less than 2 mg iron/mL are not permissible. Injefer must not be administered by the subcutaneous or intramuscular route.

Haemodialysis-dependant chronic kidney disease
A single maximum daily injection dose of 200 mg iron should not be exceeded in haemodialysis-dependant chronic kidney disease patients.

Use in paediatric population: The use of Ferric carboxymaltose has not been studied in children, and therefore is not recommended in children under 14 years.

Contraindications
The use of Injefer is contraindicated in case of:
- Hypersensitivity to the active substance, to Injefer or any of its excipients
- Known serious hypersensitivity to other parenteral iron products
- Anaemia not attributed to iron deficiency, e.g. other microcytic anemia
- Evidence of iron overload or disturbances in the utilization of iron

Side Effects: The side effects of Ferric carboxymaltose are infrequent, usually mild and generally do not cause patients to stop treatment. The most common side effects are nausea, injection site reactions (including pain or bruising at the injection site), and asymptomatic reductions in blood phosphorus, flushing, headache, hypertension, dizziness, and increased alanine aminotransferase. Potentially long lasting brown staining of skin near injection site may occur. Uncommon side effects are hypersensitivity, paraesthesia, dysgeusia, tachycardia, hypotension, flushing, dyspnoea, vomiting, dyspepsia, abdominal pain, constipation, diarrhea, pruritus, urticaria, erythema, rash, myalgia, back pain, arthralgia, muscle spasms, pyrexia, fatigue, chest pain, oedema peripheral, chills, aspartate aminotransferase increased, gamma-glutamyltransferase increased, blood lactate dehydrogenase increased and blood alkaline phosphatase increased. Very rare side effects are anaphylactoid reactions, loss of consciousness, anxiety, phlebitis, syncope, presyncope, bronchospasm, flatulence, angioedema, pallor face oedema, rigors, malaise and influenza like illness.

Use in pregnancy & lactation
Pregnant women: There are no data for the use of Ferric carboxymaltose in pregnant women. A careful risk/benefit evaluation is required before use during pregnancy and Ferric carboxymaltose should not be used during pregnancy unless clearly necessary. Animal data suggest that iron released from Ferric carboxymaltose can cross the placental barrier and that its use during pregnancy may influence skeletal development in the fetus. If the benefit of Ferric carboxymaltose treatment is judged to outweigh the potential risk to the fetus, it is recommended that treatment should be confined to the second and third trimester.
Lactating mothers: Ferric carboxymaltose is excreted in human milk which unlikely to affect the baby.

Precautions
Hypersensitivity Reactions: Serious hypersensitivity reactions, including anaphylactic-type reactions, some of which have been life-threatening and fatal, have been reported in patients receiving Ferric carboxymaltose. Patients may present with shock, clinically significant hypotension, loss of consciousness, and/or collapse. Monitor patients for signs and symptoms of hypersensitivity during and after Ferric carboxymaltose administration for at least 30 minutes and until clinically stable following completion of the infusion. Only administer Ferric carboxymaltose when personnel and therapies are immediately available for the treatment of serious hypersensitivity reactions. Other serious adverse reactions associated with hypersensitivity which included, pruritus, rash, urticaria, wheezing, or hypotension may occur.
Hypertension: Transient elevations in systolic blood pressure, sometimes occurring with facial flushing, dizziness or nausea were observed. These elevations generally occurred immediately after dosing and resolved within 30 minutes. Monitor patients for sign and symptoms of hypertension following each Ferric carboxymaltose administration.
Laboratory Test Alterations: In the 24 hours following administration of Ferric carboxymaltose, laboratory assays may overestimate serum iron and transferrin bound iron by also measuring the iron in Ferric carboxymaltose.

Drug Interactions: Formal drug interaction studies have not been performed with Ferric carboxymaltose.

Over dosage: Excessive dosages of **Injefer®** may lead to accumulation of iron in storage sites potentially leading to hemosiderosis. Monitoring of iron parameters such as serum ferritin and transferrin saturation may assist in recognizing iron accumulation. If iron accumulation has occurred, treat according to standard medical practice, e.g. consider the use of an iron chelator.

Storage: Keep out of reach of children. Store in a dry place, below 20°C to 25°C temperature and protected from light. Do not freeze.

Packaging
Injefer® 100 IV: Each box contains one vial of 2 ml Ferric carboxymaltose solution with one 50 ml normal saline, one infusion set, one alcohol pad, one first aid band, hanger and one 3 ml disposable syringe.
Injefer® 500 IV: Each box contains one vial of 10 ml Ferric carboxymaltose solution with one 100 ml normal saline, one infusion set, one alcohol pad, one first aid band, hanger and one 10 ml disposable syringe.
Injefer® 1 gm IV: Each box contains one vial of 20 ml Ferric carboxymaltose solution with one 250 ml normal saline, one infusion set, one alcohol pad, one first aid band, hanger and one 20 ml disposable syringe.

Opsonin
Opsonin Pharma
Ideas for healthcare

Manufactured by
Opsonin Pharma Limited
Rupatali, Barishal, Bangladesh
® Registered Trade Mark