

# Summary of Product Characteristics

▼ This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions. See section 4.8 for how to report adverse reactions.

## 1 NAME OF THE MEDICINAL PRODUCT

Diafer 50 mg/ml solution for injection

## 2 QUALITATIVE AND QUANTITATIVE COMPOSITION

One millilitre of solution contains 50 mg iron as ferric derisomaltose.

A 2 ml ampoule contains 100 mg iron as ferric derisomaltose.

One ml of solution contains up to 4.6 mg (0.2 mmol) sodium, see section 4.4.

For the full list of excipients, see section 6.1.

## 3 PHARMACEUTICAL FORM

Solution for injection.

Dark brown, non transparent solution with pH 5.0-7.0 and an approximate osmolarity of 400 mOsm/l.

## 4 CLINICAL PARTICULARS

### 4.1 Therapeutic Indications

Diafer is indicated in adults for the treatment of iron deficiency in patients with chronic kidney disease on dialysis, when oral iron preparations are ineffective or cannot be used.

The diagnosis of iron deficiency should be based on appropriate laboratory tests (e.g. serum ferritin, serum iron, transferrin saturation or hypochromic red cells).

### 4.2 Posology and method of administration

#### Posology

Diafer may be administered as an up to 200 mg dosage with a maximum weekly administration of 1000 mg. If higher doses than 200 mg of iron are needed, other iron medicinal products intended for intravenous use should be used.

The iron dose must be individualised based on the clinical response to treatment including evaluation of haemoglobin, ferritin and transferrin saturation, concomitant treatment with an erythropoiesis stimulating agent (ESA) and the dose of ESA treatment. Targets may vary from patient to patient and depending on local guidelines.

Maintenance therapy with iv iron treatment may be given as small doses administered at regular intervals to maintain iron status tests stable within specific limits with the intent of avoiding development of iron deficiency or decline of iron test parameters below specific levels.

#### *Paediatric population:*

Diafer is not recommended for use in children and adolescents < 18 years due to insufficient data on safety and efficacy in children.

Method of administration:

Monitor carefully patients for signs and symptoms of hypersensitivity reactions during and following each administration of Diafer.

Diafer should only be administered when staff trained to evaluate and manage anaphylactic reactions is immediately available, in an environment where full resuscitation facilities can be assured. The patient should be observed for adverse effects for at least 30 minutes following each Diafer injection (see section 4.4).

*Adults and the elderly:*

Diafer can be administered either as an intravenous bolus injection or during a haemodialysis session directly into the venous limb of the dialyser. It may be administered undiluted or diluted in up to 20 ml sterile 0.9% sodium chloride.

Diafer should not be administered concomitantly with oral iron preparations, since the absorption of oral iron might be decreased (see section 4.5).

**4.3 Contraindications**

- Non-iron deficiency anaemia (e.g. haemolytic anaemia)
- Iron overload or disturbances in utilisation of iron (e.g. haemochromatosis, haemosiderosis)
- Hypersensitivity to the active substance, to Diafer or any of its excipients listed in section 6.1
- Known serious hypersensitivity to other parenteral iron products
- Decompensated liver cirrhosis and hepatitis

**4.4 Special warnings and precautions for use**

Parenterally administered iron preparations can cause hypersensitivity reactions including serious and potentially fatal anaphylactic/anaphylactoid reactions. Hypersensitivity reactions have also been reported after previously uneventful doses of parenteral iron complexes. There have been reports of hypersensitivity reactions which progressed to Kounis syndrome (acute allergic coronary arteriospasm that can result in myocardial infarction, see section 4.8).

The risk is enhanced for patients with known allergies including drug allergies, including patients with a history of severe asthma, eczema or other atopic allergy.

There is also an increased risk of hypersensitivity reactions to parenteral iron complexes in patients with immune or inflammatory conditions (e.g. systemic lupus erythematosus, rheumatoid arthritis).

Diafer should only be administered when staff trained to evaluate and manage anaphylactic reactions is immediately available, in an environment where full resuscitation facilities can be assured. Each patient should be observed for adverse effects for at least 30 minutes following each Diafer injection. If hypersensitivity reactions or signs of intolerance occur during administration, the treatment must be stopped immediately. Facilities for cardio respiratory resuscitation and equipment for handling acute anaphylactic/anaphylactoid reactions should be available, including an injectable 1:1000 adrenaline solution. Additional treatment with antihistamines and/or corticosteroids should be given as appropriate.

Parenteral iron should be used with caution in case of acute or chronic infection.

Diafer should not be used in patients with ongoing bacteraemia.

Hypotensive episodes may occur if intravenous injection is administered too rapidly.

Caution should be exercised to avoid paravenous leakage when administering Diafer. Paravenous leakage of Diafer at the injection site may lead to irritation of the skin and potentially long lasting brown discolouration at the site of injection. In case of paravenous leakage, the administration of Diafer must be stopped immediately.

One ml of undiluted Diafer contains up to 4.6 mg (0.2 mmol) of sodium. This has to be taken into account in patients on a sodium-controlled diet.

**4.5 Interaction with other medicinal products and other forms of interactions**

As with all parenteral iron preparations the absorption of oral iron is reduced when administered concomitantly. Oral iron therapy should not be started earlier than 5 days after the last injection of Diafer.

Parenteral iron may cause falsely elevated values of serum bilirubin and falsely decreased values of serum calcium.

**4.6 Fertility, pregnancy and lactation**Pregnancy

There are no adequate and well-controlled trials of Diafer in pregnant women. A careful risk/benefit evaluation is therefore required before use during pregnancy and Diafer should not be used during pregnancy unless clearly necessary (see section 4.4).

Iron deficiency anaemia occurring in the first trimester of pregnancy can in many cases be treated with oral iron. Treatment with Diafer should be confined to the second and third trimester if the benefit is judged to outweigh the potential risk for both the mother and the foetus.

Foetal bradycardia may occur following administration of parenteral irons. It is usually transient and a consequence of a hypersensitivity reaction in the mother. The unborn baby should be carefully monitored during intravenous administration of parenteral irons to pregnant women.

Breastfeeding

There is no information available on the excretion of Diafer in the human breast milk.

Fertility

There is no information available on the possible effects of Diafer on male and female fertility.

**4.7 Effects on ability to drive and use machines**

Diafer has no or negligible influence on the ability to drive and use machines.

**4.8 Undesirable effects**

Due to limited clinical data on Diafer the mentioned undesirable effects are primarily based on safety data for other parenteral iron solutions.

More than 1% of patients may be expected to experience adverse reactions.

Acute, severe anaphylactoid reactions may occur with parenteral iron preparations, although they are uncommon. They usually occur within the first few minutes of administration and are generally characterised by the sudden onset of respiratory difficulty and / or cardiovascular collapse; fatalities have been reported. Other less severe manifestations of immediate hypersensitivity are also uncommon and include urticaria, rashes, itching, nausea and shivering. Administration must be stopped immediately if signs of an anaphylactoid reaction are observed.

Delayed reactions may also occur with parenteral iron preparations and can be severe. They are characterised by arthralgia, myalgia and sometimes fever. The onset varies from several hours up to four days after administration. Symptoms usually last two to four days and settle spontaneously or following the use of simple analgesics. In addition, exacerbation of joint pain in rheumatoid arthritis can occur and local reactions may cause pain and inflammation at or near injection site and a local phlebotic reaction.

Very common ( $\geq 1/10$ )

Common ( $\geq 1/100$  to  $< 1/10$ )

Uncommon ( $\geq 1/1,000$  to  $< 1/100$ )

Rare ( $\geq 1/10,000$  to  $< 1/1,000$ )

Very Rare ( $< 1/10,000$ )

Not known (cannot be estimated with the available data)

**Cardiac disorders**

Rare: Arrhythmia, tachycardia

Very rare: Foetal bradycardia, palpitations

Not known: Kounis syndrome

**Blood and lymphatic system disorders**

Very rare: Haemolysis

**Nervous system disorders**

Uncommon: Blurred vision, numbness, dysphonia

Rare: Loss of consciousness, seizure, dizziness, restlessness, tremor, fatigue, altered mental status

Very rare: Headache, paresthesia

**Ear and labyrinth disorders**

Very rare: Transient deafness

**Respiratory, thoracic and mediastinal disorders**

Uncommon: Dyspnoea

Rare: Chest pain

**Gastrointestinal disorders**

Uncommon: Nausea, emesis, abdominal pain, constipation

Rare: Diarrhoea

**Skin and subcutaneous tissue disorders**

Uncommon: Flushing, pruritus, rash

Rare: Angioedema, sweating

**Musculoskeletal and connective tissue disorders**

Uncommon: Cramps

Rare: Myalgias, arthralgia

**Vascular disorders**

Rare: Hypotension

Very rare: Hypertension

**General disorders and administration site conditions**

Uncommon: Anaphylactoid reactions, feeling hot, fever, soreness, inflammation near the injection site, local phlebitic reaction

Rare: Fatigue

Very rare: Acute severe anaphylactic reactions

Not known: Influenza like illness whose onset may vary from a few hours to several days.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via HPRC Pharmacovigilance, Website: [www.hpra.ie](http://www.hpra.ie)

**4.9 Overdose**

The ferric derisomaltose in Diafer has a low toxicity. The preparation is well tolerated and has a minimal risk of accidental overdosing.

Large doses of parenteral iron (500 mg or more) have been reported to give a brown colour to serum from a blood sample drawn four hours after administration.

Overdose may lead to accumulation of iron in storage sites eventually leading to haemosiderosis. Monitoring of iron parameters such as serum ferritin may assist in recognising iron accumulation. Supportive measures such as chelating agents can be used.

## 5 PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Iron parenteral preparation, ATC code: B03AC

Diafer solution for injection is a colloid with strongly bound iron in spheroidal iron-carbohydrate particles. The carbohydrate part of the complex constitutes derisomaltose, which consists of 3-5 glucose units with an average molecular weight of approximately 1000 kDa. The complex forms a stable matrix type structure with about 10 iron(III) atoms to one molecule of derisomaltose pentamers. Derisomaltose does not contain any reducing sugar residues, which can be involved in complex redox reactions.

INN name: Ferric derisomaltose (also known as iron(III) isomaltoside 1000).

The iron is available in a non-ionic water-soluble form in an aqueous solution with pH between 5.0 and 7.0.

Evidence of a therapeutic response can be seen within a few days of administration of Diafer as an increase in the reticulocyte count.

Serum ferritin peaks approximately 7 to 9 days after an intravenous dose of Diafer and slowly returns to baseline after about 3 weeks.

### 5.2 Pharmacokinetic properties

Pharmacokinetic studies are not available for Diafer. Information given is based on literature data from various parenteral iron preparations.

The Diafer formulation contains iron in a strongly bound complex that enables a controlled and slow release of bioavailable iron to iron-binding proteins with little risk of free iron.

Following intravenous administration, ferric derisomaltose is rapidly taken up by the cells in the reticuloendothelial system (RES), particularly in the liver and spleen from where iron is slowly released. The plasma half life is approximately 1 day for total iron (bound and circulating).

Circulating iron is removed from the plasma by cells of the reticuloendothelial system which split the complex into its components of iron and derisomaltose. The iron is immediately bound to the available protein moieties to form hemosiderin or ferritin, the physiological storage forms of iron, or to a lesser extent, to the transport molecule transferrin. This iron, which is subject to physiological control, replenishes haemoglobin and depleted iron stores.

Iron is not easily eliminated from the body and accumulation can be toxic. Due to the size of the complex, ferric derisomaltose is not eliminated via the kidneys. Small quantities of iron are eliminated in urine and faeces.

Derisomaltose is either metabolised or excreted.

### 5.3 Preclinical safety data

Pharmacokinetic studies are not available for Diafer. Information given is based on literature data from various parenteral iron preparations.

Iron complexes have been reported to be teratogenic and embryocidal in non-anaemic pregnant animals at high single doses above 125 mg iron/kg body weight. The highest recommended dose in clinical use is 20 mg iron/kg body weight.

There are no other additional preclinical data of relevance to the prescriber than those already included in other sections of the SPC.

## 6 PHARMACEUTICAL PARTICULARS

### 6.1 List of excipients

Water for injections

Sodium chloride  
Sodium hydroxide (for pH adjustment)  
Hydrochloric acid (for pH adjustment)

## 6.2 Incompatibilities

In the absence of compatibility studies, this medicinal product must not be mixed with other medicinal products except those mentioned in section 6.6

## 6.3 Shelf life

30 months

*Shelf life after first opening of the container (undiluted):*

From a microbiological point of view the product should be used immediately.

*Shelf life after dilution with sterile 0.9% sodium chloride:*

Chemical and physical in-use stability has been demonstrated for 48 hours at 30°C in dilutions with up to 20 ml sterile 0.9% sodium chloride.

From a microbiological point of view, unless the method of opening/ reconstitution/ dilution precludes the risk of microbial contamination, the product should be used immediately.

If not used immediately, in-use storage times and conditions are the responsibility of user.

## 6.4 Special precautions for storage

Do not freeze.

For storage conditions after first opening or after dilution of the medicinal product, see section 6.3.

## 6.5 Nature and contents of container

Type 1 glass ampoule.

Pack sizes: 1 x 2 ml, 5 x 2 ml, 10 x 2 ml, 25 x 2 ml

Not all pack sizes may be marketed.

## 6.6 Special precautions for disposal and other handling

Inspect ampoules visually for sediment and damage before use. Use only those containing sediment-free, homogeneous solution.

Diafer is for single use only and any unused solution or waste material should be disposed of in accordance with local requirements.

Diafer must only be mixed with sterile 0.9% sodium chloride. No other intravenous dilution solutions should be used. No other therapeutic agents should be added. For dilution instructions, see section 4.2.

The diluted solution for injection should be visually inspected prior to use. Use only clear solutions without sediment.

## 7 MARKETING AUTHORISATION HOLDER

Pharmacosmos A/S  
Roervangsvej 30  
DK-4300 Holbaek  
Denmark

**8 MARKETING AUTHORISATION NUMBER**

PA0982/004/001

**9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 9<sup>th</sup> May 2014

Date of last renewal: 14<sup>th</sup> February 2018

**10 DATE OF REVISION OF THE TEXT**

October 2020