Exiron

Iron Sucrose Injection USP

COMPOSITION
Exiron Injection: Each 5 ml ampoule contains 100 mg elemental Iron as Iron Sucrose USP.

DESCRIPTION
Intravenous Iron Sucrose is more effective and well tolerated in comparison with oral Iron preparations and it is the treatment of choice for anemia due to Iron deficiency. Administration of Iron Sucrose replenishes tissue Iron stores, reverses Iron depletion and Iron-deficient erythropoiesis and corrects or prevents Iron deficiency anemia.

PHARMACOLOGY
Pharmacodynamics: Following intravenous administration of Exiron, Iron Sucrose is dissociated by the reticuloendothelial system into iron and sucrose. Iron is transferred from the blood to a pool of Iron in the liver and bone marrow. Ferritin, an Iron storage protein, binds and sequesters Iron in a nontoxic form, from which Iron is easily available. Iron binds to plasma transferrin, which carries Iron within the plasma and the extracellular fluid to supply the tissues. The transferrin receptor, located in the cell membrane, binds the transferrin Iron complex, which is then internalized in vesicles. Iron is released within the cell and the transferrin-receptor complex is returned to the cell membrane. Transferrin without Iron (apotransferrin) is then released to plasma. The intracellular Iron becomes (mostly) hemoglobin in circulating red blood cells (RBCs).
Pharmacokinetics: In healthy adults treated with intravenous doses of Iron Sucrose, its iron component exhibits first order kinetics with an elimination half-life of 6 h, total clearance of 1.2 L/h, non-steady state apparent volume of distribution of 10.0 L and steady state apparent volume of distribution of 7.9 L. The sucrose component is eliminated mainly by urinary excretion.

INDICATIONS
Exiron is indicated for the treatment of Iron deficiency in the following indications:
- Where there is a clinical need for a rapid Iron supply.
- In patients who cannot tolerate oral Iron therapy or who are non-compliant.
- In active inflammatory bowel disease where oral Iron preparations are ineffective.
- Non-dialysis dependent chronic kidney disease (CKD) patients either receiving or not receiving an erythropoietin
- Hemodialysis dependent-chronic kidney disease (HDD-CKD) patients receiving an erythropoietin.
- Peritoneal dialysis dependent-chronic kidney disease (PDD-CKD) patients receiving an erythropoietin.

DOSAGE AND ADMINISTRATION
Adults and Elderly: Exiron is exclusively to be administered intravenously by slow injection or by drip infusion, or directly into the venous limb of the dialyser. Iron Sucrose must not be used for intramuscular injection.

As Intravenous injection: Iron Sucrose can also be administered undiluted by slow intravenous injection at a rate of 1 ml Iron Sucrose (20 mg Iron) per minute [5 ml Iron Sucrose (100 mg Iron) in 5 minutes]. A maximum of 10 ml Iron Sucrose (200 mg Iron) can be administered per injection in at least 10 minutes.

As Infusion: Iron Sucrose should preferably be administered by drip infusion (in order to reduce the risk of hypotensive episodes and paravenous injection) in a dilution of 1 ml Iron Sucrose (20 mg Iron) in max. 20 ml 0.9% Sodium Chloride [5 ml (100 mg Iron) in max. 100 ml 0.9% NaCl etc. up to 25 ml (500 mg Iron) in max. 500 ml 0.9% NaCl]. Dilution must take place immediately prior to infusion and the solution should be administered as follows: 100 mg Iron in at least 15 minutes; 200 mg Iron in at least 30 minutes, etc. Normal posology is to use 5-10 ml Iron Sucrose 1-3 times a week depending on the Hemoglobin level. For the administration of the maximum tolerable dose of 7 mg Iron/kg body weight an infusion time of at least 3.5 hours has to be respected, independently of the total dose.

Chronic Kidney Disease Patients not on Dialysis: Exiron is administered as a total cumulative dose of 1000 mg over a 14 day period, or as an infusion of 500 mg of Exiron over a period of 4 hours on day 1 and day 14. Patients weighing less than 70 kg may require longer infusion times.
Hemodialysis Patients: Exiron is administered as a 100 mg slow intravenous injection or as an infusion of 100 mg per consecutive hemodialysis session for a total cumulative dose of 1000 mg.
Peritoneal Dialysis Patients: Exiron is administered as a total cumulative dose of 1000 mg in 3 divided doses within a 28 day period. 2 infusions of 300 mg over 1.5 hours 14 days apart followed by one 400 mg infusion over 2.5 hours 14 days later.

Children: There is a limited data on Children under study conditions. If there is a clinical need, it is recommended not to exceed 0.15 ml Iron Sucrose (3 mg Iron) per kg body weight 1-3 times a week depending on the hemoglobin level.

Calculation of Dosage:
The dosage has to be individually adapted according to the total Iron deficit calculated with the following formula:
Total Iron deficit [mg] = body weight [kg] x (target Hb - actual Hb) [g/L] x 0.24* + depot Iron [mg].
Up to 35 kg body weight: target Hb = 130 g/L resp. depot Iron = 15 mg/kg body weight.
Above 35 kg body weight: target Hb = 150 g/L resp. depot Iron = 500 mg.
*Factor 0.24=0.0034 x 0.07 x 1,000 (Iron content of hemoglobin ≡ 0.34%/Blood volume ≡ 7% of body weight/Factor 1000 = conversion from gm to mg).

$$\text{Total amount of Exiron to be administered (in ml)} = \frac{\text{Total Iron deficit [mg]}}{\text{20 mg/ml}}$$

Calculation of no. of ampoules required for different body weight and different hemoglobin level

No. of Exiron ampoules required for different body weight and different hemoglobin level																		
Hb level g/dl	**5 Kg**	**10 Kg**	**15 Kg**	**20 Kg**	**25 Kg**	**30 Kg**	**35 Kg**	**40 Kg**	**45 Kg**	**50 Kg**	**55 Kg**	**60 Kg**	**65 Kg**	**70 Kg**	**75 Kg**	**80 Kg**	**85 Kg**	**90 Kg**
1.5	2	4	6	8.5	10.5	13	16	18	19.5	21	22	24	26	27.5	29	31	32.5	34
3	2	4	6	8	10	12	15	16.5	18	19.5	21	22.5	24	25	26.5	28	29.5	31
4.5	2	3.5	5	7	9	10.5	14	15	16.5	17.5	19	20	21.5	22.5	24	25	26.5	27.5
6	1.5	3	5	6.5	8	9.5	12.5	13.5	15	16	17	18	19	20	21	22.5	23.5	24.5
7.5	1.5	3	4.5	5.5	7	8.5	11.5	12	13	14	15	16	16.5	17.5	18.5	19.5	20.5	21.5
9	1.5	2.5	3.5	5	6	7.5	10	11	11.5	12	13	13.5	14.5	15	16	16.5	17	18
10.5	1	2	3	4	5.5	6.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.3	14	14.5

If the total necessary dose exceeds the maximum allowed single dose, then the administration has to be splitted. If no response of the hematological parameters is observed after 1 to 2 weeks the original diagnosis should be reconsidered.

SIDE EFFECTS
Iron Sucrose is generally well tolerated. However, occasionally metallic taste, headache, nausea, vomiting and hypotension may occur. Less frequently side-effects are paresthesia, abdominal disorders, muscular pain, fever, urticaria, flushing, edema of the extremities, anaphylactic (pseudoallergic) reactions and in the region of the punctured vein, phlebitis and venous spasm have been observed.

PRECAUTIONS
Iron Sucrose should be administered with caution in patients with asthma, eczema, other atopic allergies or allergic reaction to other parenteral Iron preparations, low binding capacity and/ or folic acid deficiency, liver dysfunction, acute or chronic infection.
Blood Pressure: Monitor blood Pressure during infusion. If hypotension occurs, slow the rate of infusion. If hypotension continues, discontinue infusion and be prepared to treat appropriately.
- Discontinue oral Iron preparations before administering parenteral Iron products. Co-administration of parenteral Iron preparations may reduce absorption of oral Iron.
- The dose will be in terms of elemental Iron.
- For IV administration only. Not for intradermal, subcutaneous, IM, or intra-arterial administration.
- Medication is administered 1-3 times/ week. Do not administer more than 3 times/ week.
- Discard any unused diluted solution. Do not save unused solution for future use.
- Do not administer if particulate matter or discoloration noted.

CONTRAINDICATIONS
The use of Iron Sucrose is contraindicated in patients with evidence of Iron overload, in patients with known hypersensitivity to Iron preparations or any components preparation, in patients with anemia not caused by Iron deficiency.

USE IN PREGNANCY AND LACTATION
Pregnant women: FDA pregnancy category B. Lactating mothers: It is not known whether this drug is excreted in human milk. As many drugs are excreted in human milk, caution should be exercised when Iron Sucrose is administered to a nursing woman.

DRUG INTERACTIONS
Iron Sucrose should not be administered concomitantly with oral Iron preparations since the absorption of oral Iron is decreased. Do not mix with other medication or add to parenteral nutrition solutions for IV infusion.

OVERDOSE
Iron Sucrose should not be given to people with Iron overload and should be stopped when serum ferritin levels equal or exceed established guidelines. Particular caution should be used to avoid Iron overload where anemia that does not respond to treatment has been incorrectly diagnosed as Iron deficiency anemia. Symptoms associated with overdose or infusing Iron Sucrose too rapidly included hypotension, headache, vomiting, nausea, dizziness, joint aches, paresthesia (abnormal sensation, such as tingling or burning), abdominal and muscle pain, edema and cardiovascular collapse.

STORAGE CONDITATION
Store below 30^0C temperature. Protected from light & moisture. Keep all the medicines out of the reach of children.

PACKAGING
Exiron Injection: Each box contains one 5 ml ampoule of Iron Sucrose in blister pack, 100 ml of 0.9% Sodium Chloride in PVC pack, one 5 ml sterile Disposable Syringe, One Infusion Set, one Alcohol pad and one First Aid Bandage.

Manufactured by:
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