National Agency for Food & Drug Administration & Control (NAFDAC)

Registration & Regulatory Affairs (R & R) Directorate

SUMMARY OF PRODUCT CHARACTERISTICS (SmPC)
DARROWS HALF STRENGTH

SUMMARY OF PRODUCT CHARACTERISTICS (SmPC)

1. NAME OF THE MEDICINAL PRODUCT

Darrow's half strength intravenous solution for infusion

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each 100ml contains:

Potassium Chloride BP	0.130g
Sodium Chloride BP	0.200g
Sodium Lactate Solution Eq. Sodium Lactate BP	0.300g

Mmol/l	Na^+	k^+	Cl^-
	60	18	52

For a full list of excipients, see Section 6.1.

3. PHARMACEUTICAL form

Solution for infusion

Clear solution free from visible particles

4. Clinical particulars

4.1 Therapeutic indications

- Dehydration secondary to vomiting, diarrhea
- Hypovolemia secondary to blood losses
- Metabolic acidosis (with exceptions of lactate acidosis)

4.2 Posology and method of administration

Paediatric population

Darrows solution may be administered to children with diarrhea in a dose of 80ml/kg diluted by 5% glucose – 100ml/kg. (see Section 4.3).

In adults

The solution is administered as an intravenous drip instilled at a rate of 20 gtt/min, and the 24-hour dose should not exceed 2,000 ml. Due to the high potassium concentrations, the solution should be instilled without exceeding the maximal infusion rate in order to avoid plasma potassium elevation and thus cardiac rhythm disorders. If there are indications for infusion at a higher rate, such infusion should be done under continuous ECG monitoring and plasma potassium monitoring. Solution for infusion quantity is estimated based on the lost secretions and excretions (liter for liter) or according to the circadian demand of the individual

4.3 Contraindications

Darrows full strength is contraindicated in patients with:

- Atroventricular Block
- Congestive heart failure
- Extracellular hyperhydration
- Hepatic insufficency
- Concomitant digitalis therapy
- Hypercalcemia
- Hyperkalemia
- Hypersensitivty
- Liver cirrhosis
- New borns less than 28 days of age

4.4 Special warnings and precautions for use

No special warning for use

4.5 Interaction with other medicinal products and other forms of interaction

If you use other drugs or over the counter products at the same time, the effects of Darrows full strength intravenous solution may change. This may increase the risk for side-effects or cause your drug not to work properly. Tell your doctor about all the drugs, vitamins, and herbal supplements you are using, so that the interactions will be prevented or managed.
Darrows full strength intravenous solution mahy interact with the following drug and products:

- Acetaminophen
- Aspirin
- Chlorpheniramine
- Cyclosporin A
- Hydrocodone
- Indomethacin
- Mannitol
- Oxytocin
- Salsalate
- Terbutaline

4.6 Pregnancy and lactation

No restrictions apply for Darrows solution administration during pregnancy and nursing

4.7 Effects on ability to drive and use machines

As Darrows solution is administered in patient settings, no activities such as driving and using machines are performed.

4.8 Undesirable effects

No adverse drug reactions are practically observed if Darrows solution for infusion is administered properly.

4.9 Overdose

Excessive Darrow solution for infusion may alter extracellular fluid composition and lead to potassium intoxication- rhythm disorders and even asystolia, paresthesia as an ealry sign.

Treatment: upon potassium intoxication signs, calcium glucose 10% 10-20ml is administered intravenously as an antidote, with glucose 40% 40ml with 12-16 IU insulin.

5. PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Solution for I.V administration, Solution affecting the electrolyte balance

ATC code: B05BB

Darrow solution is isotonic, and it is a combination of sodium and potassium cations with lactate and chlorine anions at a ratio close to that in small intestine juice. Due to its relatively high content of potassium cations, Darrow solution is used predominantly for correction of hypokalemia conditions. Lactate addition allows binding free H^+ during lactate metabolism, and therefore Darrow solution acts as an alkalinizing agent. Sodium plays an important role in tissue fluid osmotic balance maintenance. The sodium cation is the principal extracellular ion associated with the transmembrane action potential.

Sodium chloride is an important inorganic component of extracellular fluids, and its concentration (about 0.9 per cent) determines blood osmotic pressure. Following parenteral administration in the form of isotonic solution, it causes transient hydremia (passes rapidly to tissues by osmosis) and mild diuresis, and in dehydration it replenishes body fluid losses, however it produces no electrolyte balance.

In intoxications, it facilitates dilution of toxic substances and their rapid elimination through the kidneys. Used as diluent of medicines, sodium chloride does not disturb the molecular balance in cells. Sodium chloride removes purulent matter and promotes granulation tissue formation. Taken orally in appropriate quantities, it stimulates gastric secretion and appetite, and retains fluids in the body. In higher doses and extremely concentrated solutions, it causes vomiting. It may produce a hemostatic effect in hemorrhages from the lungs, stomach, etc., predominantly through reflexes.

Potassium is the principal intracellular ion (98% of potassium is intracellular), and it plays an important role in electrolyte balance. Potassium ions participate in nerve impulse conduction along nerve fibers, in synaptic transmission of nerve excitation and muscle contraction occurrence, in cardiac automation maintenance, etc. Myocardial contractile function, protein metabolism, glycogen synthesis, vegetative nervous system tone, all depend on the sodium-potassium ratio to a great extent. Reduced potassium blood level increases the risk of arrhythmia development upon high digitalis dose intake. Potassium is antagonist of cardiac glycosides with respect to their effects on cardiac rhythm. Chlorine anions enter the body in the form of sodium and potassium chloride. Their dynamics depends on sodium dynamics associated with the function of kidneys and perspiration glands. Exceptions exist, as well – e.g. in acidosis, more chlorine anions are excreted with urine than sodium cations, as well as in abundant vomiting, more chlorine anions are eliminated, which participate in hydrochloric acid composition.

Highest chlorine anion concentrations occur in extracellular fluids. Upon i.v. sodium lactate administration, sodium cations are released, which bind and neutralize acid ions and radicals, while the lactate ion undergoes metabolism whereby part of it accumulates as glycogen, while another part decomposes to carbonic acid and hydrogencarbonates.

5.2 Pharmacokinetic properties

The sodium and chlorine ions from sodium chloride have no specific pharmacological action. They are eliminated from the body through the kidneys by glomerular filtration with subsequent tubular reabsorption; through perspiration, gastric juice.

Potassium accumulates in cells by an energy-dependent pump, during which it is exchanged for sodium. High concentration gradient between tissues and extracellular fluid is maintained. The volume of distribution of potassium is unstable. Extracellular potassium levels are easily elevated, however its total body quantity does not change significantly. Plasma potassium levels are leading for its application as a therapeutic agent.
Potassium is excreted predominantly through the kidneys. Unlike the extensively developed renal sodium sparing mechanisms, the kidneys respond weakly to reduced potassium intake. Even in severe hypokalemia, potassium in urine rarely drops under 5-10 mEq daily.

Conversely, higher potassium intake causes rapid renal response, and the excess is rapidly excreted by secretion in the distal tubules. With normal daily dietary potassium intake of about 100 mEq, about 85-90% are excreted with urine. About 10-15 mEq potassium are eliminated daily with feces.
Potassium is easily eliminated from the body by dialysis. Dialysis may be used in hyperkalemia.
Lactate ion metabolism occurs along the pathway of accumulation of certain part of it as glycogen and along the pathway of decomposition of another part to carbonic acid and hydrocarbonates

5.3 Preclinical safety data

Carcinogenicity, mutagenicity, and fertility impairment studies have indicated no evidence of such toxicity.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Not Applicable

6.2 Incompatibilities

Not applicable.

This medicinal product must not be mixed with other medicinal products except those mentioned in Section 6.6.

6.3 Shelf life

3 years

6.4 Special precautions for storage

Store below 30°C

Protect from light

6.5 Nature and contents of container special equipment for use, administration or implantation

500ml in a low density polyethylene container

To be used with a sterile pyrogen-free administration set using aseptic technique.

Insert spike wth the bottle in upright position.

The overwrap is a protective barrier.

Do not remove the container from overwrap until ready to use. Do not use if overwrap has been previously opened or damaged**.**

6.6 Special precautions for disposal and other handling

No special requirements

7. APPLICANT/SUPPLIER

Name and address: Fidson Helathcare Plc

Tel: +23480067964

Fax: -

Email: info@fidson.com

8. WHO PREQUALIFICATION REFERENCE NUMBER

Not applicable

9. DATE OF <PREQUALIFICATION> / <RENEWAL OF PREQUALIFICATION>

Not applicable

10. DATE OF REVISION OF THE TEXT

First Version (November/2018)

Reference list

[This list provides references to relevant WHO guidelines and to relevant literature and databases, in addition to the SmPC(s) of the innovator product(s). The list is compiled by WHO.]

Detailed information on this medicinal product is available on PQTm's website (see: http://www.who.int/prequal).