

Summary of Product Characteristics

1 NAME OF THE MEDICINAL PRODUCT

Hartmann's Solution for Infusion, glass bottle

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Bag :	50 ml	100 ml	250 ml	500 ml	1000 ml
Sodium chloride (g)	0.30	0.60	1.50	3.00	6.00
Potassium chloride (g)	0.020	0.040	0.10	0.20	0.40
Dihydrated calcium chloride (g)	0.01	0.03	0.07	0.14	0.27
50% sodium lactate solution (g)	0.32	0.63	1.59	3.17	6.34

For full list of excipients, see section 6.1.

Molar formula

Bag :	50 ml	100 ml	250 ml	500 ml	1000 ml
Sodium (mmol)	6.55	13.09	32.73	65.45	130.90
Potassium (mmol)	0.27	0.54	1.35	2.70	5.40
Calcium (mmol)	0.09	0.18	0.46	0.92	1.84
Chloride (mmol)	5.59	11.17	27.93	55.85	111.70
Lactate (mmol)	1.42	2.83	7.08	14.15	28.30

3 PHARMACEUTICAL FORM

Solution for infusion.

Osmolarity: 279 mOsm/l

Osmolarity: 255 mOsm/kg

pH: 5.5 to 6.3

Clear colourless solution.

4 CLINICAL PARTICULARS

4.1 Therapeutic Indications

- Predominantly extracellular dehydration, regardless of cause (vomiting, diarrhea, fistulas, etc.).
- Hypovolemia regardless of cause: hemorrhagic shock, burns, peri-operative water and electrolyte loss.
- Mild metabolic acidosis.

4.2 Posology and method of administration

Posology :

This is determined by the physician according to clinical status, age and weight of the patient and according to laboratory findings.

Method of administration :

This solution must be given by slow intravenous infusion under strictly aseptic conditions.

4.3 Contraindications

This medicine is contraindicated in the following situations:

- o Hypervolaemia (predominantly extracellular hyperhydration),
- o decompensated congestive cardiac failure,
- o hyperkalemia,
- o hypercalcemia,
- o metabolic alkalosis,

as well as in combination with digitalis (*see Interaction with other medicinal products and other forms of interaction section*).

4.4 Special warnings and precautions for use

Warnings

This solution must not be given by intramuscular injection.

Keep to a slow infusion rate.

The infusion must be stopped if any abnormal sign develops.

Risk of complications related to volume and amount of electrolytes administered.

Risk of overload of cardiovascular system with pulmonary edema, especially in predisposed individuals.

Infusion of Hartmann's solution may cause metabolic alkalosis because of the presence of lactate ions.

Hartmann's may not produce its alkalinizing action in patients with hepatocellular insufficiency since lactate metabolism may be impaired.

Check the color and clarity of the solution, as well as that the container is not damaged before use. Discard any damaged or partially used container.

In case of concomitant blood transfusion and because of the presence of calcium, Hartmann's solution must not be administered via the same infusion system because of the risk of coagulation.

Precautions for use

The patient's clinical status and laboratory parameters (blood and urine electrolytes) must be monitored during use of this solution, especially in the following situations:

- o congestive cardiac failure,
- o severely impaired renal function,
- o edema with sodium retention.

Since this solution contains potassium, combination with hyperkalaemic diuretics is not recommended, plasma potassium must be particularly closely monitored in patients at risk of hyperkalemia, e.g. in the presence of severe chronic renal failure.

It is inadvisable to use this medicine in combination with angiotensin converting enzyme inhibitors, angiotensin II receptor antagonists, or with tacrolimus (*see Interaction with other medicinal products and other forms of interaction section*).

Precautions for using bag :

- o use immediately once opened;
- o do not use an air entry;
- o do not connect in series since the residual of the first container might be carried on by the solution coming from the second container, with the risk of air embolism.

4.5 Interaction with other medicinal products and other forms of interactions

Interactions related to the presence of calcium

Contraindicated combination :

+ **digitalis preparations** : serious or even fatal cardiac arrhythmias, especially in the presence of hypokalemia.

- Combination needing to be taken into account :

+ **thiazide diuretics** : risk of hypercalcemia via decreased urinary calcium excretion.

Interactions related to the presence of potassium

- Inadvisable combinations :

+ **hyperkalemic diuretics** : amiloride, spironolactone, triamterene, alone or in association : potentially fatal hyperkalemia, notably in the presence of renal failure (addition of hyperkalemic effects).

+ **angiotensin converting enzyme inhibitors (ACEi) and, by extrapolation, angiotensin II receptor antagonists** : potentially fatal hyperkalemia, notably in the presence of renal failure (addition of hyperkalemic effects).

+ **tacrolimus**: potentially fatal hyperkalemia, notably in the presence of renal failure (addition of hyperkalemic effects).

4.6 Fertility, pregnancy and lactation

This solution can be used during pregnancy or lactation if necessary.

4.7 Effects on ability to drive and use machines

Not applicable.

4.8 Undesirable effects

Potential undesirable effects may occur in poor conditions of use or if administration is too fast.

During administration of Hartmann's Solution for Infusion, the following undesirable effects have been reported:

- General disorders and administration site conditions: oedema due to water/sodium overload (unknown frequency).

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorization 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 in Ireland to HPRAs Pharmacovigilance

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4.9 Overdose

Poor conditions of use, such as an overdose, may lead to signs of hypervolemia with tightened skin, venous stasis, oedema – possibly also lung – or brain oedema, disturbed acid-base balance and electrolyte balance and serum hyperosmolality.

The infusion should be interrupted immediately.

Overdose should be treated in a specialist unit.

Extra-renal dialysis may be necessary.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

SOLUTION MODIFYING ELECTROLYTE BALANCE (ATC Code: BO5 BB 01).

This is an isotonic crystalloid solution to be used for vascular filling and restoration of water/electrolyte balance and which has an ionic composition very close to that of extracellular fluid.

The correction of extracellular dehydration and/or of blood volume deficit is accompanied by hemodilution.

Pharmacological properties are those of the constituents of the solution (sodium, potassium, calcium, chloride).

Hartmann's Solution for Infusion is neutral and has an excess of chloride ions over sodium ions because of the presence of potassium chloride and calcium chloride.

Lactate ion is a bicarbonate precursor buffer anion, i.e. participating in the regulation of acid-base balance. This conversion may be impaired in the presence of hepatocellular insufficiency.

Metabolic alkalosis may result from excess intake of lactate ions.

If lactate metabolism is blocked (type B lactic acidosis), the intake of lactate results in accumulation of the anion in the blood.

In contrast, during the correction of hypovolemic shock (with type A lactic acidosis), improvement in circulatory status, and hence in hepatic perfusion, enables the restoration of normal lactate metabolism which corrects the process.

5.2 Pharmacokinetic properties

This solution disseminates in the extracellular compartment, with a matching increase in the volume of the latter. Lactate ion is quickly metabolized by the liver, where it is converted to pyruvate, used in the Krebs cycle with the production of bicarbonate.

5.3 Preclinical safety data

Non clinical data reveal no special hazard for humans based on conventional studies of safety pharmacology, repeated dose toxicity, genotoxicity, carcinogenic potential, toxicity to reproduction.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Hydrochloric acid (pH adjustment)
Sodium hydroxide (pH adjustment)
Water for injections

6.2 Incompatibilities

Physical-chemical incompatibilities:

It is up to the physician to determine the incompatibility of an added medicine regarding Hartmann's solution, by checking for any possible color change and/or possible formation of precipitate, insoluble complex or crystals.

There is physical-chemical incompatibility with certain antibiotics when they are given intravenously: chlortetracycline, amphotericin B, oxytetracycline.

Before adding any medicine, check that the pH zone in which it is effective corresponds to that of Hartmann's Solution for Infusion.

Also check the package leaflet of the medicine to be added.

Once a medicine is added to Hartmann's Solution for Infusion, the mixture must be administered immediately.

In the absence of compatibility studies, this medicinal product must not be mixed with other medicinal products.

6.3 Shelf life

5 years

After opening or mixture with other drugs, the product should be used immediately

6.4 Special precautions for storage

Do not store above 25°C.

6.5 Nature and contents of container

1, 10, 12 x 250 ml, 1, 10, 12 x 500 ml or 1 and 6 x 1000 ml in non colored, type II glass bottle closed by chlorobutyle closure.

Not all pack sizes may be marketed.

6.6 Special precautions for disposal of a used medicinal product or waste materials derived from such medicinal product and other handling of the product

Check the color and clarity of the solution, as well as that the container is not damaged before use. Discard any damaged or partially used container.

Precautions for using bag:

- o use immediately once opened;
- o do not use an air entry;

o do not connect in series since the residual of the first container might be carried on by the solution coming from the second container, with the risk of air embolism.

The chemical and physical stability of any additive at the pH of solution Hartmann's, introduced into the Hartmann's, must be established before use.

Once a medicine is added to Hartmann's Solution for Infusion, the mixture must be administered immediately.

7 MARKETING AUTHORISATION HOLDER

Fresenius Kabi Deutschland GmbH
Else-Kroener Strasse 1
Bad Homburg v.d.H 61352
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8 MARKETING AUTHORISATION NUMBER

PA2059/057/004

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

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Date of last renewal: 14 May 2007

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August 2019