Summary of Product Characteristics

1 NAME OF THE MEDICINAL PRODUCT

Prismasol 2 mmol/l Potassium solution for haemodialysis/haemofiltration

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Prismasol 2 mmol/l Potassium is presented in a two-compartment bag containing in the smaller compartment A, the electrolyte solution, and in the larger compartment B, the buffer solution. The final reconstituted solution is obtained after breaking the frangible pin and mixing both solutions.

BEFORE RECONSTITUTION
1 000 ml of electrolyte solution (small compartment A) contains:
active substances:
Calcium chloride dihydrate 5.145 g
Magnesium chloride hexahydrate 2.033 g
Glucose 22.00 g
(as glucose monohydrate)
(S)-Lactic acid 5.400 g
(as lactic acid solution 90 %w/w)

1 000 ml of buffer solution (large compartment B) contains:
active substances:
Sodium chloride 6.45 g
Potassium chloride 0.157 g
Sodium hydrogen carbonate 3.090 g

A+B
Calcium chloride, 2 H_2O 0.257 g
Magnesium chloride, 6 H_2O 0.102 g
Glucose 1.100 g
Lactic acid 0.270 g
Sodium chloride 6.128 g
Potassium chloride 0.149 g
Sodium hydrogen carbonate 2.936 g

AFTER RECONSTITUTION
1 000 ml of the reconstituted solution contains:

Active substances	mmol/l	mEq/l
Calcium Ca^{2+}	1.75	3.50
Magnesium Mg^{2+}	0.5	1.0
Sodium Na^{+}	140	140
Chloride Cl^{-}	111.5	111.5
Lactate	3	3
Hydrogen carbonate HCO_3^{-}	32	32
Potassium K^{+}	2	2
Glucose	6.1	

Each litre of the final reconstituted solution corresponds to 50 ml of electrolyte solution A and 950 ml of buffer solution B.

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Solution for haemodialysis/haemofiltration
Clear reconstituted solution with a slightly yellow colour.

Theoretical Osmolarity:297 mOsm/l
pH of the reconstituted solution: 7.0 – 8.5

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Prismasol 2 mmol/l Potassiumis used in the treatment of renal failure, as substitution solution in haemofiltration and haemodiafiltration and as dialysis solution in continuous haemodialysis or continuous haemodiafiltration.

Prismasol 2 mmol/l Potassium solution may also be used in case of drug poisoning with dialysable or filterable substances.

Prismasol 2 mmol/l Potassium solution is indicated in patients who have tendency to hyperkalaemia.

4.2 Posology and method of administration

Posology:
The rate at which Prismasol 2 mmol/l Potassium is administered depends on the blood concentration of electrolytes, acid-base balance, fluid balance and overall clinical condition of the patient. The volume of replacement solution and/or dialysate to be administered will also depend on the desired intensity (dose) of the treatment. The solution should be prescribed and administration (dose, infusion rate, and cumulative volume) should be established only by a physician experienced in critical care medicine and CRRT (Continuous Renal Replacement Therapy).

Flow rates for the substitution solution in haemofiltration and haemodiafiltration are:
Adult: 500 - 3000 mL/hour

Flow rates for the dialysis solution (dialysate) in continuous haemodialysis and continuous haemodiafiltration are:
Adult: 500 - 2500 mL/hour

Commonly used flow rates in adults are approximately 2000 to 2500 ml/h which correspond to a daily fluid volume of approximately 48 to 60 L.

Special population:

Elderly population
Evidence from clinical studies and experience suggests that use in the elderly population is not associated with differences in safety or effectiveness.

Paediatric population:

The range of flow rates for the substitution solution in haemofiltration and haemodiafiltration and for the dialysis solution (dialysate) in continuous haemodialysis are:
Children (from neonates to adolescents to 18 years): 1000 to 2000 mL/h/1.73 m^2
Flow rates up to 4000 mL/h/1.73 m^2 may be needed, especially in younger children (≤10 kg). The absolute flow rate (in mL/h) in the paediatric population should generally not exceed the maximum adult flow rate.

Method of administration:
Intravenous use and for haemodialysis.

Prismasol 2 mmol/l Potassium, when used as a substitution solution is administered into the extracorporeal circuit before (pre-dilution) or after the haemofilter or haemodiafilter (post-dilution).

For further information on the use of the medicinal product see section 6.6Special precautions for disposal and other handling.

4.3 Contraindications

Hypersensitivity to the active substances or to any of the excipients listed in section 6.1.*

Solution dependent contraindications

- Hypokalaemia
- Metabolic alkalosis.

* Please pay attention that glucose contained in Prismasol may be produced from hydrolysed corn starch and therefore the presence of corn antigen in the finished product, as hypersensitivity reactions, cannot be excluded

Haemofiltration/- dialysis dependent contraindications

- Renal failure with pronounced hypercatabolism, if the uraemic symptoms cannot be corrected with haemofiltration,
- Insufficient arterial pressure in the vascular access,
- Systemic anticoagulation (high risk of haemorrhage).

4.4 Special warnings and precautions for use

The solution should be used only by, or under the direction of a physician competent in renal failure treatments using haemofiltration, haemodiafiltration and continuous haemodialysis.

Warnings:
The electrolyte solution **must** be mixed with the buffer solution **before use** to obtain the reconstituted solution suitable for haemofiltration / haemodiafiltration / continuous haemodialysis.

Use only with appropriate extracorporeal renal replacement equipment.

The solution is a potassium-containing solution. The serum potassium concentration must be monitored before and during haemofiltration and/or haemodialysis. Depending on the serum potassium concentration before treatment, hypo- or hyperkalaemia may develop.
If hypokalaemia occurs, addition of potassium and/or administration of a dialysate with higher potassium concentration may be necessary.
If hyperkalaemia occurs after treatment is initiated, additional sources of potassium influencing blood concentrations should be assessed. When the solution is used as a replacement solution, decrease the infusion rate and confirm that the desired potassium concentration is achieved. If hyperkalaemia does not resolve, stop the infusion promptly.

If hyperkalaemia develops when the solution is used as a dialysate, administration of a potassium-free dialysate may be necessary to increase the rate of potassium removal.

Despite no cases of severe corn hypersensitivity reactions being reported with Prismasol, solutions containing glucose derived from hydrolysed maize starch should not be used in patients with a known allergy to maize or maize products.

The administration must be stopped immediately if any signs or symptoms of a suspected hypersensitivity reaction develop. Appropriate therapeutic countermeasures must be instituted as clinically indicated.

Because the solution contains glucose and lactate hyperglycaemia may develop, especially in diabetic patients. Blood glucose levels should be monitored regularly. If hyperglycaemia develops, administration of glucose-free replacement solution/dialysate may be necessary. Other corrective measures may be needed to maintain desired glycaemic control.

Prismasol 2 mmol/l Potassium contains hydrogen carbonate (bicarbonate), and lactate (a hydrogen carbonate precursor) which can influence the patient's acid–base balance. If metabolic alkalosis develops or worsens during therapy with the solution, the administration rate may need to be decreased, or the administration stopped.

The use of contaminated haemofiltration and haemodialysis solution may cause sepsis, shock and death.

Special precautions for use:
Prismasol 2 mmol/l Potassium may be warmed to 37 °C to enhance patient comfort. Warming of the solution prior to use should be done before reconstitution with dry heat only. Solutions should not be heated in water or in a microwave oven. The solution should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit. Do not administer unless the solution is clear and the seal is intact.

Before and during treatment, electrolyte and acid-base balance should be closely monitored throughout the procedure.

Phosphate up to 1.2 mmol/L may be added to the solution. If potassium phosphate is added, the total potassium concentration should not exceed 4 mEq/L (4 mmol/L). Inorganic phosphate must be substituted in cases of hypophosphataemia.

The patient's haemodynamic status and fluid balance should be monitored throughout the procedure and corrected as needed.

Paediatric population:

There are no specific warnings and precautions when using this medicine for children.

4.5 Interaction with other medicinal products and other forms of interaction

The blood concentration of filterable/dialysable drugs may be reduced during treatment. Corresponding corrective therapy should be instituted if necessary to establish the desired blood concentrations for drugs removed during treatment. Interactions with other medicaments can be avoided by correct dosage of the solution for haemofiltration and haemodialysis and precise monitoring.

However, the following interactions are conceivable:

- The risk of digitalis-induced cardiac arrhythmia is increased during hypokalaemia;
- Vitamin D and vitamin D analogues, as well as medicinal products containing calcium (e.g. calcium chloride or calcium gluconate used for maintenance of calcium homeostasis, in CRRT patients receiving citrate anticoagulation and calcium carbonate as phosphate binder) can increase the risk of hypercalcaemia;
- Additional sodium hydrogen carbonate (or other buffer source) contained in the CRRT fluids or in other fluids administered during therapy may increase the risk of metabolic alkalosis;
- When citrate is used as an anticoagulant, it contributes to the overall buffer load and can reduce plasma calcium levels.

4.6 Fertility, pregnancy and lactation

Pregnancy and breastfeeding
There are no adequate data from the use of Prismasol 2 mmol/l Potassium in pregnant or lactating woman. The prescriber should consider the benefit/risk relationship before administering Prismasol 2 mmol/l Potassium to pregnant or breast-feeding woman.

Fertility
There are no data available on fertility.

4.7 Effects on ability to drive and use machines

Not relevant.

4.8 Undesirable effects

The following undesirable effects are reported from post-marketing experience. The table presented below is according to the MedDRA system organ classification (SOC and Preferred Term Level).
Frequencies: Not known (cannot be estimated from the available data).

System Organ Class	Preferred Term	Frequency
Metabolism and nutrition disorders	Electrolyte imbalances e.g.:hypophosphataemia, hypokalaemia	Not known
	Acid-base balance disorders, e.g. metabolic alkalosis	Not known
	Fluid imbalance e.g.: fluid retention, dehydration	Not known
	Hyperglycaemia	Not known
Vascular disorders	Hypotension	Not known
Gastrointestinal disorders	Nausea	Not known
	Vomiting	Not known
Musculoskeletal and connective tissue disorders	Muscle spasms	Not known

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 reactionsvia:

HPRA Pharmacovigilance, Earlsfort Terrace, IRL - Dublin 2;
Tel: +353 1 6764971;
Fax: +353 1 6762517;
Website: http://www.hpra.ie/;
E-mail: medsafety@hpra.ie.

4.9 Overdose

Overdose with Prismasol 2 mmol/l Potassium, should not occur if the procedure is carried out correctly and the fluid balance, electrolyte and acid-base balance of the patient are carefully monitored.
However, overdose could lead to severe consequences, such as congestive heart failure, electrolyte or acid-base disturbances.
If hypervolaemia or hypovolaemia occur, this should be corrected immediately.
If electrolyte imbalance and acid-base balance abnormalities (e.g., metabolic alkalosis, hypophosphataemia, hypokalaemia, etc.) occur, stop administration promptly. There is no specific antidote for overdose. The risk can be minimized by close monitoring and adequate supplementation during treatment (see section 4.4).

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Hemofiltrates.
ATC code: B05ZB

Pharmacodynamic effects
Prismasol 2 mmol/l Potassium, solution for haemofiltration and haemodialysis is pharmacologically inactive. The sodium, calcium, magnesium, potassium, chloride ions and glucose are present at concentrations similar to physiological levels in plasma.

Mechanism of action
The solution is used to replace water and electrolytes removed during haemofiltration and haemodiafiltration or to serve as a suitable exchange medium for use during continuous haemodiafiltration or continuous haemodialysis.
Hydrogen carbonate is used as an alkalising buffer.

5.2 Pharmacokinetic properties

Not relevant.
The active ingredients are pharmacologically inactive and are present at concentrations similar to physiological plasma levels.

5.3 Preclinical safety data

All the ingredients of the solution are physiological components in animal and human plasma. Toxic effects are not expected at therapeutic doses.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Electrolyte solution (small compartment A): Water for injections
Buffer solution (large compartment B): Water for injections, Carbon dioxide (E290)

6.2 Incompatibilities

In the absence of compatibility studies, this product must not be mixed with other medicinal products.
It is the responsibility of the physician to judge the incompatibility of an additive medication with the Prismasol 2 mmol/l Potassium solution by checking for eventual colour change and/or eventual precipitation, insoluble complexes or crystals. The Instructions for Use of the medication to be added must be consulted.
Before adding a drug, verify it is soluble and stable in water at the pH of Prismasol 2 mmol/l Potassium (pH of reconstituted solutions is 7.0 to 8.5).
The compatible medication must be added to the reconstituted solution and the solution must be administered immediately.

6.3 Shelf life

1 year as packaged for sale.

Chemical and physical in-use stability of the reconstituted solution has been demonstrated for 24 hours at +22°C. If not used immediately in-use storage times and conditions prior to use are the responsibility of the user and should not normally be longer than 24 hours including the duration of the treatment.

6.4 Special precautions for storage

Do not store below +4°C.
For storage conditions after reconsitution of the medicinal product, see section 6.3.

6.5 Nature and contents of container

The container made in Poly(vinyl chloride) (PVC) is a two-compartment bag. The 5000 ml bag is comprised of a small compartment (250 ml) and a large compartment (4750 ml). The two compartments are separated by a frangible pin.

The large compartment B is fitted with an injection connector (or spike connector) made of polycarbonate (PC), which is closed with a rubber disc covered by a cap as well as a luer connector (PC) with a frangible pin (PC) or a valve made of silicone rubber for the connection of the bag with a suitable replacement solution line or dialysis line. The bag is overwrapped with a transparent overwrap made of multilayer polymer film.

Each two-compartment bag contains 5000 ml.
Pack size: 2 x 5000 ml in a box

6.6 Special precautions for disposal and other handling

The electrolyte solution (small compartment A) is added to the buffer solution (large compartment B) after breaking the frangible pin immediately before use to obtain the reconstituted solution.

A patient information leaflet with detailed instruction for use is enclosed in the box.
Aseptic technique should be used throughout the handling and administration to the patient.
Do not remove unit from overwrap until ready for use.
Use only if the overwrap is not damaged, all seals are intact, frangible pin is not broken, and the solution is clear. Press bag firmly to test for any leakage. If leakage is discovered, discard the solution immediately since sterility can no longer be assured.

The large compartment is fitted with an injection port for the possible addition of other necessary drugs after reconstitution of the solution.
Before adding a substance or medication, verify that it is soluble and stable in Prismasol 2 mmol/l Potassium, and that the pH range is appropriate (pH of reconstituted solution is 7.0 to 8.5).
Additives may be incompatible. The instructions for use of the medication to be added and other relevant literature must be consulted. After addition, if there is a colour change and/or the appearance of precipitates, insoluble complexes, or crystals, do not use.
Mix the solution thoroughly when additives have been introduced. The introduction and mixing of additives must always be performed prior to connecting the solution bag to the extracorporeal circuit.

If a frangible pin separates the two compartments of the bag and a frangible pin is located in the luer connector the following instructions for use should be followed:
I Remove the overwrap from the bag and the sheet between the folded compartments. Open the seal by breaking the frangible pin between the two compartments of the bag. The frangible pin will remain in the bag.
II Make sure all the fluid from the small compartment A is transferred into the large compartment B.
III Rinse the small compartment A **twice** by pressing the mixed solution back into the small compartment and then back into the large compartment B.
IV When the small compartment A is empty: shake the large compartment B so that contents mix completely.
The solution is now ready for use.
V The dialysis or replacement line may be connected to either of the two access ports.
V.a If the luer connector is used, remove the cap and connect the male luer lock on the dialysis or replacement line to the female luer receptor on the bag: tighten. Using thumb and fingers, break the blue frangible pin at its base, and move it back and forth. Do not use a tool. Verify that the pin is completely separated and that the fluid is flowing freely. The pin will remain in the luer port during the treatment. (See figure V.a below)
V.b If the injection port is used, first remove the snap-off-cap.The injection port is a swabbable port.Then introduce the spike through the rubber septurm.Verify that the fluid is flowing freely.

If a frangible pin separates the two compartments of the bag and a valve is located in the luer connector the following instructions for use shall be followed:
I Remove the overwrap from the bag immediately before use and discard any other packaging materials. Open the seal by breaking the frangible pin between the two compartments of the bag. The frangible pin will remain in the bag.
II Make sure all the fluid from the small compartment A is transferred into the large compartment B.
III Rinse the small compartment A twice by pressing the mixed solution back into the small compartment A and then back into the large compartment B.
IV When the small compartment A is empty: shake the large compartment B so that the contents mix completely. The solution is now ready for use and the bag can be hung on the equipment.
V The dialysis or replacement line may be connected to either of the two access ports.
Va If the luer access is used, remove the cap with a twist and pull motion, and connect the male luer lock on the dialysis or replacement line to the female luer receptor on the bag using a push and twist motion. Ensure that the connection is fully seated and tighten. The connector is now open. Verify that the fluid is flowing freely.
When the dialysis or replacement line is disconnected from the luer connector, the connector will close and the flow of the solution will stop. The luer port is a needle-less and swabbable port.
Vb If the injection port is used, first remove the snap-off cap. The injection port is a swabbable port. Then introduce the spike through the rubber septum. Verify that the fluid is flowing freely.

The reconstituted solution should be used immediately. If not used immediately, the reconstituted solution should be used within 24 hours, including the duration of the treatment, after addition of the electrolyte solution to the buffer solution.

The reconstituted solution is for single use only. Do not use if container is damaged or if solution is not clear. Discard any unused portion.

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

7 MARKETING AUTHORISATION HOLDER

Baxter Holding B.V.
Kobaltweg 49

3542CE Utrecht
Netherlands

8 MARKETING AUTHORISATION NUMBER

PA2299/052/001

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

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10 DATE OF REVISION OF THE TEXT

February 2024