

DATA SHEET

NAME OF MEDICINE

Glucose Intravenous Infusion BP 50%w/v (25g/50mL) MIN-I-JET

PRESENTATION

Glucose is α -D(+)-glycopyranose; $C_6H_{12}O_6$. It is a white odourless crystalline powder, soluble in water.

Glucose is a simple carbohydrate used as an energy source in man. It is a component of sucrose, lactose and certain other sugars. Glucose injection is a sterile aqueous solution of glucose at a concentration of 50% w/v. It has a pH of 3.5 to 6.5. It contains no bacteriostatic agents, buffers or other excipients. The metabolism of one gram of glucose yields around 3.8 calories (16 J).

USES

ACTIONS

Glucose, the natural sugar occurring in the blood, is the principle source of energy for the body. In addition, it has a multitude of other roles. It is readily converted to fat which provides a rich store of energy in concentrated form. Glucose is also stored in the liver and muscles as glycogen. When a rapid raise in blood sugar is demanded by the body, glycogen is quickly converted to D-glucose. When the supply of glucose is insufficient, the body mobilises fat stores which are converted to acetate with production of energy by the same oxidative pathways employed in the combustion of glucose.

Glucose Injection 50% w/v is strongly hypertonic and is used partly because of its dehydrating effects. It has been employed to promote diuresis by increasing the osmotic pressure of the glomerular filtrate.

Another important use of glucose is the sparing of proteins which, in the absence of glucose, may be deaminated to provide carbon moieties from their constituent amino acids. These deaminated fragments may undergo oxidation in order to release energy. Glucose is also the probable source of glucuronic acid, with which many foreign substances and their metabolites come to form excretion products. It probably provides the basic substances required for the formation of hyaluronates and chondroitin sulphates, the supporting structures of the organism. It can be converted to a pentose essential for the formation of nucleic acid by the cells.

Glucose is metabolised to carbon dioxide and water with the release of energy.

INDICATIONS

- (1) Severe hypoglycaemia resulting from insulin excess;
- (2) Reduction of cerebrospinal pressure and/or cerebral oedema due to delirium tremens or acute alcohol intoxication. Increased cerebrospinal fluid pressure may be reduced for 2 to 4 hours after intravenous injection of 50 mL of 50% glucose solution.

DOSAGE AND ADMINISTRATION

Hypertonic solutions of glucose are for intravenous use only and should not be administered subcutaneously, intramuscularly or intraperitoneally.

The dose is variable and depends upon the indication, clinical condition, age, size and fluid, electrolyte and acid-base balance of the patient.

The rate of utilization of glucose varies considerably from patient to patient. As an approximate guide, the average maximal rate may be 800 mg/kg/hour. If the patient's capacity to utilize glucose is exceeded, glycosuria and diuresis will occur.

In hypoglycaemic coma, the average single dose in adults is 25 – 50 mL repeated as necessary according to the patient's response. Slow intravenous injection is recommended, e.g. 3 mL per minute. After 25 g (50mL) of glucose have been given it is advisable to interrupt the injection and evaluate the response. The exact dose required to relieve hypoglycaemia will vary. After the patient responds, supplemental oral feeding is indicated to avoid relapse.

In the treatment of acute alcoholism, 50 mL should be administered intravenously. Unmodified insulin (20 units) and thiamine hydrochloride (100 mg) should be added to the infusion.

Children

In hypoglycaemia, the dose is the same as for adults. In neonates and infants, the usual dose is 2 mL/kg of 10 – 25% glucose solution, administered slowly.

Elderly

As for adults.

CONTRAINDICATIONS

Diabetic coma, while blood sugar levels are excessively high; anuria, intracranial or intraspinal haemorrhage and in patients with delirium tremens who are already dehydrated.

Avoid use in ischaemic stroke.

This product should not be used in patients with known allergy to corn or corn products.

WARNINGS AND PRECAUTIONS

Use with caution in patients with diabetes mellitus, severe undernutrition, thiamine deficiency, hypokalaemia, hypophosphataemia, hypomagnesaemia, haemodilution, sepsis and trauma.

When using concentrated solutions of glucose, it is important that these be injected very slowly to avoid causing a local rise in the osmotic tension of the blood at the point of injection.

The use of hypertonic solutions requires particular care in order to avoid dehydration. Frequent observations of the tongue and skin and measurement of the haematocrit level are good guides to dehydration.

Intravenous glucose injections have a tendency to cause venous thrombosis. Proper technique should therefore be employed to avoid vein damage. The injection should be given slowly using a small bore needle and avoiding the walls of the vein if possible. The tourniquet should be removed as soon as venepuncture occurs. Warming the arm and the solution to room temperature will help to avoid adverse sequelae.

Intravenous administration of glucose solutions, especially as infusions, may cause fluid overload with consequent changes in fluid balance, electrolyte concentrations and acid base balance. Hyperglycaemia and glucosuria may occur.

The glucose is in a single use MIN-I-JET prefilled syringe. Once the unit is assembled and used, any remaining portion of the solution must be discarded with the entire unit.

Use in pregnancy

Safe use in pregnancy has not been established. The benefits of using the product should be weighed against possible risks to the foetus.

Use in lactation

The effect is unknown.

Interactions with other drugs

Glucose solutions should not be administered concomitantly with blood through the same infusion set as haemolysis and clumping may occur.

ADVERSE EFFECTS

Anaphylactoid effects have been reported in two patients with both asthma and diabetes mellitus.

A number of serious reactions have been reported following the intravenous injection of glucose which can be attributed to errors in technique; these include fever, infection at the site of injection, venous thrombosis, phlebitis and extravasation.

Thrombophlebitis may result from the use of hypertonic solutions via the intravenous route.

Rapid infusion of 25 – 50 g over 3 minutes may occasionally cause a generalised flush. This subsides within 10 minutes.

The administration of glucose without adequate provision of certain B vitamins, which form the coenzyme systems in its metabolism, will exhaust tissue stores of these factors, leading to deficiency states. This is particularly important in alcoholics when subclinical thiamine deficiency may precipitate an overt deficiency syndrome such as Wernicke's encephalopathy. Similarly, the utilisation of glucose will cause the intracellular movement of phosphate and potassium; in certain conditions provision must be made for replacing these products. Glucose administration can exacerbate diabetes mellitus.

OVERDOSAGE

Overdosage will cause hyperglycaemia and glycosuria may occur. This can lead to dehydration, mental confusion, hyperosmolar coma and death.

Treatment

The infusion should be discontinued. Insulin may be administered and appropriate supportive measures taken.

PHARMACEUTICAL PRESENTATION

Store below 25°C. Protect from light

MEDICINE CLASSIFICATION

General Sales Medicine.

PACKAGE QUANTITIES

Glucose Injection is available in a single use pre-filled MIN-I-JET syringe containing 25 g glucose in 50 mL (0.5 g/mL).

FURTHER INFORMATION

Nil

NAMES AND ADDRESSES

Manufactured by:
International Medication Systems, Limited
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DATE OF PREPARATION

August 1996

Amended: August 2004