※※Revised: September 2011 (9th version)
※ Revised: May 2009

Standard Commodity Classification No. of Japan:
873259

Storage : Store at room temperature.
Expiration date: Do not use after the expiration date indicated on the outer package.
Caution : See the section "PRECAUTIONS FOR HANDLING"
Prescription drug:
(Caution – Use only pursuant to the prescription issued of physician, etc.)

Essential amino acid preparation

Hy-Pleamin S Injection - 10% "FUSO"

Approval No.	(54AM) 102
Date of listing in the NHI reimbursement price	February 1979
Date of initial marketing in Japan	July 2002
Date of latest reexamination	February 1979

CONTRAINDICATIONS (Hy-Pleamin S Injection-10% is contraindicated in the following patients.)

(1) Patients with confirmed hepatic coma or at increased risk of developing hepatic coma [The product may aggravate or induce hepatic coma.]
(2) Patients with severe renal dysfunction or azotemia [In patients with severe renal failure, urinary excretion of nitrogen compounds generated as a result of protein/amino acid metabolism (e.g., urea) may be inhibited, potentially inducing azotemia.]
(3) Patients with aberrant amino acid metabolism [Imbalance of amino acids in the circulation may lead to any adverse effect.]
(4) Patients with hereditary fructose intolerance [Fructose generated from metabolism of sorbitol *in vivo* is not properly metabolized, and may result in hypoglycemia that may induce hepatic failure or renal failure]

DESCRIPTION

※※ 1. Composition

HY-Pleamin S Injection 10% is a clear and colorless to pale yellow aqueous injection containing ingredients at the amounts listed below in 1 polyal (plastic ample; 20 mL).

		20 mL
L-Methionine		192 mg
L-Tryptophan		64 mg
L-Leucine		218 mg
L-Isoleucine		192 mg
L-Phenylalanine		128 mg
L-Arginine hydrochloride		200 mg
L-Lysine hydrochloride		240.6 mg
L-Threonine		128 mg
L-Valine		192 mg
L-Histidine hydrochloride Hydrate		100 mg
Glycine		298 mg
D-Sorbitol		1,000 mg
Inactive ingredients	L-Cysteine	7 mg
	Sodium hydrogen sulfite	6 mg
	pH adjuster	

Total free amino acid content : 9,220 mg/100 mL
Essential amino acid content (E) : 6,533 mg/100 mL
Non-essential amino acid content (N) : 2,687 mg/100 mL
E/N : 2.43
Total nitrogen content : 1,426 mg/100 mL
Electrolyte level:
Na^+ : approximately 8 mEq/L
Cl^- : approximately 137 mEq/L

2. Product Description

Hy-Pleamin S Injection-10% in 1 polyal (polyethylene container) is a clear and colorless to pale yellow aqueous injection having a characteristic odor and bitter taste.
pH : 5.0 - 6.5
Osmotic pressure ratio : 3.9 - 4.3

INDICATIONS

Hy-Pleamin S Injection-10% is indicated for amino acid supplementation in the following conditions:
hypoproteinemia, malnutrition, and before and after operation.

※ DOSAGE AND ADMINISTRATION

Usually, for adults, slowly administer 20 to 500 mL per dose intravenously or by intravenous drip infusion. The desirable infusion rate is about 10 g of amino acid per 60 minutes. Usually, for adults, administer 200 mL of the drug over 80 to 100 minutes, and take more time to administer it to pediatric or elderly patients, and patients with serious conditions.
The dose may be increased or decreased according to age, symptoms, and body weight of the patient.
The maximum daily dose is 100 g of D-sorbitol.

PRECAUTIONS

1. Careful administration (Hy-Pleamin S Injection-10% should be administered with care to the following patients)
(1) Patients with severe acidosis [acidosis may be worsened]
(2) Patients with cardiac failure congestive [cardiac failure may be worsened]

2. Adverse Drug Reactions

Hy-Pleamin S Injection-10% has not been investigated (drug use investigation, etc.) to determine the incidence of adverse reactions.
If an adverse reaction is observed, appropriate measures should be taken, including discontinuation of administration.

	Incidence unknown
Hypersensitivity	Rash, etc.
Gastrointestinal	Nausea, vomiting, etc.
Cardiovascular	Chest discomfort, palpitations, etc.
Massive/rapid administration	Acidosis following massive/rapid administration
Others	Chills, pyrexia, feeling hot, headache, vascular pain

3. Use in the Elderly

As the elderly often have reduced physiological function, appropriate measures should be considered, such as initiating infusion at a lower rate and reducing the volume administered.

4. Use during pregnancy, delivery or lactation

(1) Hy-Pleamin S injection-10% should be administered to pregnant women or in women who may possibly be pregnant only if the expected therapeutic benefits outweigh the possible risks associated with treatment. [the safety of the administration during pregnancy has not been established]
(2) Lactating women should not be given Hy-Pleamin S injection-10%. If treatment with this drug is judged to be essential, breast feeding must be discontinued during treatment. [the safety of the administration during lactation has not been established]

5. Pediatric use

The safety of Hy-Pleamin S injection-10% in children has not been established (little clinical experience).

6. Precautions concerning use

(1) **Before administration**
1) When the ambient temperature is low or shows marked fluctuation, crystals may be generated in the drug solution. In this case, warm the solution to dissolve the crystals, and cool to about body temperature before use.
2) Adequate measures should be taken to prevent infection (such as disinfecting the skin at the puncture site and sterilizing the dosing equipment).
3) Use immediately after opening ampoule. Never use the solution from a previously opened ampoule.

(2) **Precautions during dosing:** Since the product contains sodium at about 8 mEq/L and chloride at about 137 mEq/L, pay attention to the electrolyte homeostasis when infusing a massive volume of the product or infusing it in combination with an electrolyte fluid.

(3) **Precautions about infusion rate:** Slowly infuse the product intravenously.

PHARMACOLOGY

Unlike carbohydrate or fat, the main function of protein as a nutrient is not to supply energy but the amino acids essential for synthesis of protein in tissue. Protein preparations are used to replenish proteins degraded for physiological use or depleted following injury or damage of cells associated with disease or trauma.[1)]

In 1957, the FAO published a tentative standard for composition of essential amino acids, under a concept that the most idealistic pattern of protein preparation for physiological use can be obtained by combining 8 types of essential amino acids. Hy-Pleamin S Injection-10% is an L-type amino acid preparation having a pattern of essential amino acids according to the FAO standard,[2),3),4)] and can be used to replenish amino acids in patients who have insufficient or no ingestion/intestinal absorption despite high demand for proteins.

This drug also contains non-essential amino acids such as L-arginine hydrochloride, L-histidine hydrochloride hydrate, and glycine as sources of nitrogen, to facilitate synthesis of other amino acids (ratio of essential amino acids/non-essential amino acids = 2.43).

When a patient has insufficient energy, a part of the amino acids that are replenished is used as an energy source. D-sorbitol is added as a carbohydrate that is free from chemical change with amino acids[4)].

PRECAUTIONS FOR HANDLING

Polyal (snap open polyal) product:

1) Do not use the product if moisture is seen inside the blister package.
2) Do not use the product if the solution shows coloration or turbidity.
3) Use the product immediately after opening the blister pack.

Stability test

The results of accelerated testing (40℃, 75%RH, 6-month) with immediate packaged product were within the specification with regard to all parameters tested.

PACKAGING

Hy-Pleamin S Injection - 10% 20 mL 50 ampoules Polyal (snap open polyal)

Polyal (snap open polyal): Polyethylene ampoule

REFERENCES

1) Drill's Pharmacology in Medicine, 4th ed., 1309 (1971)
2) Inoue G et al., Jpn J Clinical Medicine, **24**, 12 (1966)
3) Kodeki K et al., Jpn J Clinical and Experimental Medicine, **50**, 463 (1973)
4) Kimura N et al., 臨床薬理学大系, 8th ed., 40 (1972)
5) Stability test: On file at Fuso Pharmaceutical Industries, Ltd.

REQUEST FOR LITERATURE SHOULD BE MADE TO:

Drug Information Office
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Manufactured and Marketed by:
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