

INSTRUCTION

for the use of Laferon (Laferonum)

Laferon is a pharmaceutical form of human recombinant alpha-2b interferon synthesized by Escherichia coli cells on the basis of the gene coding a product identical to human alpha-2 interferon with the use of phagedependent geneengineering biotechnology.

Biological activity of Laferon is measured in International Units. Specific activity is $2 \cdot 10^8$ IU in 1 mg of recombinant alpha-2b interferon.

The product is produced in the lyophilized form.

The lyophilized product – a white amorphous powder with residual moisture at the most 5%, well-dissolved in water. The solution is transparent, non-opalescent, pH 6,0 – 7,5 sterile.

Composition

Active component – recombinant human interferon-a 2b, specific activity in each vial or ampoule 100 000 IU, 1 000 000 IU, 3 000 000 IU, 5 000 000 IU, 6 000 000 IU, 9 000 000 IU or 18 000 000 IU.

Additives in each vial or ampoule: sodium chloride – 9 mg, dextran 70–5 mg, potassium phosphorous monobasic – 0,025 mg, dibasic sodium phosphate – 0,362 mg.

How supplied

Lyophilized powder in vials or ampoules: specific activity in each vial or ampoule 100 000, 1 000 000, 3 000 000, 5 000 000, 6 000 000, 9 000 000 or 18 000 000 IU. Laferon is supplied without or without a solvent.

CODE ATC L03A B05.

Immunological and biological properties

Laferon like natural leucocytar interferon possess three main types of biological activities: immunomodulatory, antiviral and antitumoral ones.

The mechanism of Laferon action is based on the fact that interferon binding with appropriate receptors of organism cells induces a complex of intracellular process resulting in appearance of enzymes which prevent the virus replication, enhance phagocytic activity of macrophages, specific cytotoxicity of lymphocytes towards target cells, inhibit proliferation of metastatic cells.

Indications

Laferon is indicated in adults and children for complex treatment of the following diseases:

- acute and chronic viral hepatitis B (moderate and severe forms);
- acute viral, bacterial and mixed infections including newborns;
- acute and chronic septic diseases of viral and bacterial origin including disseminated forms of acute and chronic sepsis;
- herpetic infections of different localization: herpes zoster, multiple dermal herpetic eruptions; genital herpetic infection; herpetic kerato- conjunctivitis and keratouveitis and others;
- chronic urogenital chlamydiosis;
- affection of nervous system with mono- and polyradicular painful syndromes;
- laryngeal papillomatosis;
- multiple sclerosis;
- malignant growth: melanoma of skin and uvea; renal cell carcinoma; urinary bladder carcinoma; ovarian cancer; breast cancer; Kaposi's sarcoma; myeloma.

- hemoblastosis: chronic myeloid leukemia, hairy cell leukemia, non-Hodgkin's lymphoma.

Administration and dosage

- it solution is injected intramuscularly, intravenously, endolymphatically, intraperitoneally, intravesically, rectally, parabolbarly, intranasal. To dissolve the content of ampoule water for injections is used if need to dissolve in 1 ml and physiological solution is used if need to dissolve in a greater amount.

Acute viral hepatitis B:

- it is injected intramuscularly in doses of 1 million IU (in severe forms - in doses of 2 million IU) twice a day for 10 days. This course may be prolonged to 2 – 3 weeks depend upon the patient's clinical status or extended in doses of 1 million IU twice a week for a few weeks.

Chronic viral hepatitis B:

- it is injected intramuscularly in doses of 3-4 million IU three times a week for 2 months.

Acute respiratory viral infection in children including newborns:

- it is injected intranasal in doses of 2-3 drops into each nasal passage 3-6 times a day for 3 – 5 days; dosage of the preparation for newborns – 20 – 50 thousand IU/ml, for other children – 100 thousand IU/ml. Acceptably loading into nasal passages for 10 – 15 minutes (by turns) cotton turundas wetted by Laferon.

Acute respiratory viral infection (including flu) in adults:

- it is injected intramuscularly in doses of 1 - 3 million IU starting with the first – second disease's days for 3 days;
- intranasal in doses of 4 - 6 drops of Laferon solution (100 thousand IU/ml) into each nasal passage 6 - 8 times a day (before usage the dose must be warmed in the syringe (syringe without needle should be used) to body temperature, the rest solution should be kept in the refrigerator, protected from bacterial contamination).

Acute and recurrent pneumonia of viral and viral-bacterial aetiology:

- it is injected intramuscularly in doses of 1 million IU for 5 – 7 days against a background of complex treatment included antibacterial, detoxic and anti-inflammatory therapy.

Acute diarrhea syndrome in newborns:

- rectally in the form of daily microclyster containing 100 thousand IU of Laferon for 3 – 7 days.

Acute intestinal infections in infants with hypocoagulation effects:

- rectally in doses of 10 thousand IU/kg of body weight three times at 48 hour intervals.

Purulent septic diseases, peritonitis, multiple abscess of abdominal cavity:

- intravenously in doses of 2 - 4 million IU once a day; total dose is 12 - 16 million IU per course; advisability of simultaneous endolymphatic injection of preparation in the same doses of 2 - 4 million IU once a day are not excluded.

Herpetic infections:

- **herpes zoster:** daily in doses of 1 million IU intramuscularly + 2 million IU in 5 ml of physiological solution subcutaneously in a few spots around eruption area. Treatment time is 5 - 7 days.

- **dermal herpetic eruptions:** daily intramuscular or subcutaneous (around the diseased area) injection of the preparation in doses of 2 million IU; the treatment may be combined with local application on herpetic papulae.

- **genital herpetic infection:** daily intramuscular injection in doses of 2 million IU in combination with local use of preparation in the form of application on eruption area.

- **herpetic keratoconjunctivitis:** application of Laferon solution - 1 million IU in 5 ml of physiological solution - under conjunctiva in doses of 2 - 3 drops in every 2 hours for 7 - 10 days; in the disappearance of diseases symptoms the preparation may be applied in every 4 hours.

Chronic urogenital chlamydiosis:

Treatment of patients with urogenital chlamydiosis is conducted in two stages:

The first preparatory stage includes use of enterosorbent, polyvitamins in therapeutic doses during two weeks. Since the tenth day the immunotropic preparation thymaline in doses of 10 mg is injected intramuscularly in the evening in a day, the course - five injections.

The second stage is main during which the basal therapy is carried out by antibacterial remedies in the following scheme:

The first antibiotic is administered during 5 days; after 7 days interval the patients are administered another antibiotic for 10 days. During the interval and the ending of course of antibacterial therapy Laferon in doses of 1 million IU intramuscularly once a day in the evening is administered, ten injections per course.

During the treatment by antibacterial remedies it is necessary to use antifungoid preparations (nystatin, diflucane, clotrimasol, nysoral) and hepatoprotectors (carsil) in therapeutic doses.

Affection of nervous system with mono- and polyradicular painful syndromes:

- intramuscularly in doses of 1 million IU for 5 - 10 days in complex treatment.

Laryngeal papillomatosis:

- intramuscular (if it is possible - perifocal in laryngeal area) injection of Laferon in doses of 100 - 150 thousand IU/kg of body weight daily for 20 - 25 days. Such courses are recommended to repeat with intervals 1 - 1,5 months for half year, and then in 2 - 3 months for the next half year. It is expedient to combine laferonotherapy with A-vitamin therapy (retinoids).

Multiple sclerosis:

- intramuscularly in doses of 1 million IU 2 - 3 times a day for 10 - 15 days with following injection of 1 million IU once a week for half year.

Malignant growth:

- **melanoma of skin:** intramuscular injection in doses of 3 million IU a day for 10 days with the next repeat of the mentioned courses at 1,5 months intervals for half year or: endolymphatic injection of Laferon in doses of 3 million IU 4 times at 48 hours intervals with the next lymphotropic injection of preparation monthly for 4 days in doses of 1 million IU.

- **uveal melanoma:** parabolbarly daily in doses of 1 million IU for 10 days; the repeated 10-day injections are conducted twice in 20 days; total course of Laferon is 30 million IU. The necessity of repeated courses in 45 days is not excluded; Laferon treatment is combined with photodestruction of tumor and beta-application.

- **renal cell carcinoma:** intramuscularly daily for 10 days; in doses of 3 million IU per injection; total course is 30 million IU, the repeated courses are conducted at 3 - 5 weeks intervals for half year and then at 1,5 - 2 months intervals for a year.

- **urinary bladder carcinoma:** intravesical installations in doses of 5 - 10 million IU per installation 3 - 6 times. Total course is 30 million IU. To repeat every 2 - 3 months for 1 - 2 years.

- **ovarian cancer:** intraperitoneally during surgical operation and the next 5 days - in drainage- in doses of 5 million IU; the subsequent injection of Laferon - intramuscularly in doses of 3 million IU for 10 days between courses of chemotherapy; total doses of Laferon is 90 million IU. The following courses may be administered at 2 - 3 months intervals for 1 - 1,5 years: in doses of 3 million IU daily for 10 days.

- **breast cancer:** intramuscularly daily for 10 days in doses of 3 million IU per injection. The repeated courses are conducted for a year at 1,5 - 2 months intervals, and then at 2 - 3 months intervals (depending on clinical status); it is expedient to alternate courses of Laferonotherapy with courses of chemotherapy (or radiotherapy).

- **Kaposi's sarcoma:** intramuscularly daily for 10 days in doses of 3 million IU per injection; the treatment is combined with monochemotherapy by prospidine; the repeated courses - once a month for half year.

- **myeloma:** intramuscularly daily for 10 days in doses of 3 million IU per injection; the repeated courses - once for 1,5 - 3 months (4 - 6 times for a year).

Hemoblastosis

- **chronic myeloid leukemia:** intramuscularly daily in doses of 5 million IU per injection. May be used as monotherapy or in complex with small doses of cytosar (Ara C) (20 mg/m² per day every 10 days of current month) and hydroxyurea (40 mg/m² everyday). Course duration is 6 months. Supporting Laferon therapy administered everyday in doses of 5 million IU after achievement of remission up to 10-12 months.

- **hairly cell leukemia:** intramuscularly in doses of 3 million IU three times a week (every other day) over 4-6 weeks. Supporting therapy administered every other day in doses of 3 million IU after achievement of remission up to 10-12 months.

- **non-Hodgkin's lymphoma:** intramuscularly in doses of 3 million IU three times a week (every other day) over 12-18 months as a supporting therapy after achievement of remission as a result of a chemotherapy application. In the period of partial remission application of another chemotherapy protocols is recommended with further Laferon therapy in doses of 3 million IU (intramuscularly) 3 times a week over 18 months.

Adverse reactions

Injection therapy of Laferon (likewise all other alpha-interferon products) accompanies by a flu-like syndrome in the most cases, which are characterised by fever, chill, headache, myalgia, arthralgia, fatigue. These side effects depend on doses and, usually, present only in the first days of therapy then become weaker and stop. The symptoms can be stopped or noticeably decreased by prescription of paracetamol in doses of 0,5-1g 30-40 min before injection.

During long-term courses sometimes leucopenia and thrombocytopenia are observed, which can be stopped by dose decrease.

Contraindications

Laferon is contraindicated at hypersensitivity to interferon alpha 2b or any other of the components of the preparation as well as in pregnancy.

Side effects

In injection of Laferon in doses of 3 million IU and more some patients feel slight and short-term chill and fever, the repeated injections are better. During long courses sometimes leuko- and thrombocytopenia are observed eliminated by dose reducing.

Availability

Lyophilized powder in ampoules: activity in each ampoule 100 thousand, 1 million, 3 million, 5 million IU according to marking.

Storage

Lyophilized preparation must be stored in refrigerator (+4 °C - +10 °C).

The solution of preparation for injections is used immediately; for intranasal use the solution should be used during 24 hours at its storage in refrigerator (+4 °C - +10 °C).

The preparation belongs to the list B.

Expiration period is 2 years.

Packaging (How supplied)

Vials and ampoules with lyophilized powder are packaged in cardboard boxes per 1, 5 or 10 pieces in each.

Vials and ampoules with lyophilized powder are packaged in cardboard boxes per 1 or 5 pieces in each with a solvent (1 or 2 ml of water for injection) in vials or ampoules per 1 or 5 pieces accordingly.

Manufactured by Scientific Production Company "Pharm-Biotek" Ltd, Ukraine.

Claims on preparation should be send to Committee for Immunobiological preparations, Ministry of Health of Ukraine (252038, Kiev, spusk Protasov Yar, 4) and to producers:

03143, Kiev, Zabolotnogo, 150, SPC "PharmBiotek" (266-20-24; 266-50-49; 266-55-45);

61070, Kharkov, Pomerki, "Biolek" (47-40-43).