Mildronate®
Injections

Registration number:
N016028/02-200509

Trade name
Mildronate®.

International nonproprietary name (INN)
meldonium.

Chemical name
3-(2,2,2,2-trimethylhydrazinium)propionate dihydrate.

Dosage form
solution for intramuscular, intravenous and parabulbar administration.

Composition
1 ml of the solution contains:
active substance - meldonium dihydrate 100 mg;
auxiliary substance - water for injection.

Description
Transparent colorless liquid.

Pharmacotherapeutic group
Metabolic agent.

ATX code:
C01EB.

Pharmacological properties

Pharmacodynamics
Meldonium (Mildronate®) is a structural analog of gamma-butyrobetaine - a substance that is found in every cell of the human body.
Under conditions of increased load Mildronate® restores the balance between delivery and oxygen demand of cells, eliminates the accumulation of toxic metabolic products in cells, protecting them from damage; it also has a tonic effect. As a result of its use, the body acquires the ability to withstand the load and quickly restore energy reserves. Due to these properties Mildronate® is used to treat various disorders of cardiovascular system activity, blood supply to the brain, as well as to increase physical and mental performance. As a result of a decrease in carnitine concentration, gamma-butyrobetaine, which has vasodilating properties, is synthesized intensively. In case of acute ischemic myocardial damage Mildronate® slows down the formation of necrotic zone, shortens the rehabilitation period. In heart failure increases myocardial contractility, increases tolerance to physical load, reduces the frequency of angina attacks. In acute and chronic ischemic cerebral circulation disorders Mildronate® improves blood circulation in ischemia focus, promotes blood redistribution in favor of ischemic area.
The drug eliminates functional disorders of the nervous system in patients with chronic alcoholism in withdrawal syndrome.

Pharmacokinetics
Bioavailability of the drug after intravenous administration is equal to 100%. The maximum concentration in blood plasma is reached immediately after its administration. It is metabolized in the body with the formation of two major metabolites, which are excreted by the kidneys. The half-life (T1/2) is 3-6 hours.

Indications for use
In the complex therapy of ischemic heart disease (angina pectoris, myocardial infarction); chronic heart failure and dyshormonal cardiomyopathy, as well as in the complex therapy of acute and chronic disorders of blood supply to the brain (stroke and cerebrovascular insufficiency). Hemophthalmos and retinal hemorrhages of various etiologies, thrombosis of the central retinal vein and its branches, retinopathy of various etiologies (diabetic, hypertensive).
Reduced efficiency; mental and physical overload (including athletes).
Withdrawal syndrome in chronic alcoholism (in combination with specific therapy for alcoholism).

Contraindications
Hypersensitivity to the components of the drug, increased intracranial

pressure (with impaired venous outflow, intracranial tumors), age under 18 years (efficacy and safety have not been established), pregnancy, lactation.

With caution
In diseases of the liver and / or kidney.

Use in pregnancy and during breastfeeding
Safety of use in pregnant women has not been studied, therefore, to avoid possible adverse effects on the fetus, its use is contraindicated. The excretion of the drug Mildronate® with milk and its effect on the health of the newborn has not been studied, therefore, if necessary to use, breastfeeding should be discontinued.

Method of administration and dosage
Due to the possible development of excitatory effect, it is recommended to use in the first half of the day. Mildronate is administered intramuscularly (v/m), intravenously (v/v) and parabulbarly.
The method of administration, doses and duration of the course of treatment are established individually, depending on the indications, severity of the condition, etc.
1***. Cardiovascular diseases***
As part of complex therapy:

- ischemic heart disease (myocardial infarction) intravenously by 0.5-1.0 g per day (5-10 ml of Mildronate® preparation), applying the whole dose at once or dividing it into 2 injections;
- ischemic heart disease (stable angina pectoris); chronic heart failure and dyshormonal cardiomyopathy intravenously 0.5-1.0 g per day (5-10 ml of Mildronate® preparation), applying the whole dose at once or dividing it into 2 injections, or intravenously 0.5 g 1-2 times a day, treatment course 10-14 days, followed by switching to oral intake.

The total course of treatment is 4-6 weeks.
2. Disturbance of cerebral circulation
As a part of complex therapy in the acute phase 0.5 g (5 ml of Mildronate® preparation) once a day intravenously for 10 days, followed by oral intake of 0.5-1 g. Total course of treatment - 4-6 weeks. In chronic insufficiency of cerebral circulation (dyscirculatory encephalopathy) 0.5 g (5 ml of Mildronate® preparation) intramuscularly or intravenously once a day for 10 days, then 0.5 g orally. Total course of treatment -4-6 weeks.
Repeated courses (usually 2-3 times a year) are possible after consultation with a doctor.
3 Ophthalmopathology
(hemophthalmos and retinal hemorrhages of various etiologies, thrombosis of the central retinal vein and its branches, retinopathy of various etiologies (diabetic, hypertensive)).
0.05 g (0.5 ml of Mildronate® preparation) parabulbarically for 10 days. It is also used as a part of combined therapy.
4. Mental and physical overload
0.5 g (5 ml of Mildronate® preparation) intramuscularly or intravenously once a day. Course of treatment - 10-14 days. If necessary, treatment is repeated in 2-3 weeks.
5. Chronic alcoholism
0.5 g (5 ml of Mildronate® preparation) intravenously or intravenously 2 times a day. Course of treatment -7-10 days.

Side effects
Rarely - allergic reactions (redness, rashes, itching, edema), as well as dyspeptic phenomena, tachycardia, decreased or increased blood pressure, agitation. Very rare - eosinophilia, general weakness.

Overdose
Symptoms: decrease in blood pressure accompanied by headache, tachycardia, dizziness and general weakness.
Treatment: symptomatic.
Mildronate® is low toxic and does not cause side effects dangerous for patients' health.

Interaction with other medicinal products
Can be combined with antianginal agents, anticoagulants, anticoagulants, antiaggregants, antiarrhythmic agents, diuretics, bronchodilators. It enhances the effect of cardiac glycosides.
Due to possible development of moderate tachycardia and arterial hypotension, caution should be exercised in combination with nitroglycerin, nifedipine, alpha-adrenoblockers, other hypotensive agents and peripheral vasodilators, as Mildronate® enhances their effect.

Special instructions
Long-term experience of treatment of acute myocardial infarction and unstable angina pectoris in cardiology departments shows that Mildronate is not a first-line drug in acute coronary syndrome and its use is not acutely necessary. Effect on the ability to drive vehicles and

mechanisms
There are no data on the adverse effect of Mildronate® on the speed of psychomotor reaction.

Form of release

Solution for intramuscular, intravenous and parabulbar injection, 100 mg/mL.
5 ml in a colorless glass ampoule with a line or a break point.
5 ampoules each in a cell pack made of polyvinylchloride film or uncoated polyethylene terephthalate film (pallet).
Two cell packs (pallet) together with instructions for use in a cardboard pack.

Storage conditions

Store at a temperature not exceeding 25 ° C.
Do not freeze!
Keep out of reach of children.

Shelf life

4 years.
Do not use after expiration date indicated on the package.

Conditions of release from pharmacies

By prescription.

Holder of the registration certificate

JSC "Grindeks" 53 Krustpils Street, Riga, LV-1057, Latvia.

Manufacturer(s)

-JSC "Sanitas". 134 V Veiveru Street, Kaunas, LT-46352, Lithuania.
-Elfa Pharmaceutical Company S.A. 21 Wincentytego Pola Street, Jelenia Góra, 58-500, Poland
-PJSC "Pharmstandard-UfaVITA", Russia. 28, Khudaiberdin St., Ufa, 450077, Republic of Bashkortostan, Russia;
-HBM Pharma s.r.o. Sklabinska ul. 30, Martin, 036 80, Slovakia