Miostat* solution for injection

Alcon Switzerland SA

* A trademark of Novartis

Medicinal Products Licensing Ordinance

Composition

Active substance: Carbachol

Excipients: Sodium chloride, potassium chloride, calcium chloride, magnesium chloride, sodium acetate, sodium citrate. The required amount of water for injection to produce solution.

Pharmaceutical form and quantity of active substance per unit

Intraocular solution for injection in 1.5 mL ampoules.

0.5 mL of solution contains 0.05 mg carbachol.

Therapeutic indications/Potential uses

To constrict pupils (miosis) during surgery.

Posology/Administration

Adults

Open each ampoule only in a sterile environment: draw up contents into a dry, sterile syringe.

Before instillation into the eye, the syringe needle must be replaced with an atraumatic cannula.

No more than 0.5 mL of Miostat should be carefully instilled into the anterior chamber of the eye to achieve adequate miosis.

Maximal miosis usually occurs 2–5 minutes after instillation.

No studies have been conducted to evaluate the effects of renal or hepatic function on elimination of carbachol. In animals, carbachol is primarily eliminated via the kidneys. Since systemic exposure of carbachol after intraocular irrigation (rinsing the eye) in humans is estimated to be low, no dose adjustment is deemed necessary for patients with impaired liver or kidney function.

Children and adolescents

The use and safety of Miostat solution for injection in children and adolescents have not yet been tested.

Contraindications

Hypersensitivity to the active substance or any of the excipients.

Special warnings and precautions for use

Intraocular instillation of carbachol 0.01% must be applied with *caution* in patients with acute heart disease, bronchial asthma, gastric ulcer, hyperthyroidism, gastrointestinal spasm, urinary tract obstruction and Parkinson’s disease.

The use of Miostat may increase intraocular inflammation caused by surgery.

The vial contains rubber (latex) which can cause serious allergic reactions.

The use and safety of Miostat solution for injection in children and adolescents have not yet been tested. Therefore, use in children and adolescents is not recommended.

Interactions

No clinically relevant interactions have been reported.

Pregnancy and lactation

The medicinal product should not be used while pregnant or breast-feeding unless clearly necessary, taking into account the low systemic exposure when used during ophthalmic surgery.

Pregnancy

There are limited data on the use of carbachol in pregnant women. No direct or indirect reproductive toxic effects were observed in mice receiving carbachol.

Breast-feeding

It is not known whether carbachol is excreted in human breast milk. There is also no information regarding the safety of the ophthalmic formulation of carbachol while breast-feeding. A risk to the breastfed child cannot be ruled out.

Effect on ability to drive and use machines

Miosis can cause blurred vision and difficulty adapting to the dark. Following a surgical procedure, patients must wait until the impairments have subsided before driving or using machines.

Adverse effects

After systemic or topical application of carbachol, the classic general symptoms of cholinesterase inhibitors may be observed (however, such symptoms were not observed in clinical studies with Miostat).

Ocular reactions

The side effects most commonly associated with current miotic therapy are transient ciliary and conjunctival injection, ciliary spasm, blurred vision, photophobia, and headache. As with all miotics, retinal detachments have been reported in sensitised patients.

In rare cases, corneal clouding, corneal oedema, bullous keratopathy (blister-like epithelial detachment on the cornea) and postoperative iritis, uveitis and retinal detachment after cataract extraction have been reported following intraocular use of carbachol 0.01%.

Systemic reactions

Systemic side effects are rare but may include hot flushes, sweating, gastrointestinal hyperactivity, abdominal cramps and urinary bladder spasms (<1:1000).

Although not observed in clinical trials, post-marketing experience has shown that headache, nausea, vomiting, gastrointestinal hyperactivity and abnormal vision may occur in rare cases (<1:10,000).

The following adverse reactions have been reported during clinical trials with Miostat solution for injection. Their frequencies are defined as follows: very common (≥ 1/10), common (≥ 1/100 to < 1/10), uncommon (≥ 1/1,000 to 1/100), rare (≥ 1/10,000 or < 1/1,000) and very rare (< 1/10,000).

Nervous system disorders

Uncommon: Headache.

Eye disorders

Uncommon: Intraocular pressure increased.

In addition, the following adverse reactions have been reported post-marketing. Frequencies cannot be estimated from the data.

Eye disorders: Vision reduced, corneal degeneration, corneal clouding, inflammation of the anterior segments of the eye, corneal oedema, eye inflammation, prolonged drug action (miosis), blurred vision, eye pain, ocular hyperaemia.

Gastrointestinal disorders: Vomiting.

Overdose

In case of overdose, the following symptoms of toxicity may occur: headache, increased salivation, syncope, bradycardia, hypotension, abdominal cramps, vomiting, asthma and diarrhoea.

Management of overdose is supportive. In case of acute severe toxicity, therapy with an anticholinergic drug (parenteral atropine) may be necessary.

Properties/Effects

ATC code: S01EB02

Pharmacodynamics

Miostat (carbachol 0.01%) consists of a sterile, physiological saline solution and the active substance carbachol, a highly effective parasympathomimetic with pronounced miotic effect.

The parasympathomimetic effect is due to a cholinergic response to the motor end plate of the iris sphincter muscle.

Pharmacokinetics

No studies have been conducted on plasma levels of carbachol following intraocular administration in humans, but pharmacokinetic data from animal studies are available. These studies have shown that intravenous carbachol is eliminated very rapidly from the plasma. In animals, elimination occurs primarily via the urine with cyclic reabsorption through the bladder wall and further elimination via the kidneys.

Kinetically special populations

No studies have been conducted to evaluate the effects of renal or hepatic function on carbachol elimination. In animals, carbachol is primarily eliminated via the kidneys. Since systemic exposure of carbachol after intraocular irrigation (rinsing the eye) in humans is estimated to be minimal, dose adjustment is not considered necessary in patients with impaired kidney or liver function.

Preclinical safety data

Animal studies have been conducted using Miostat administered directly into the vitreous body, or into the anterior chamber in conjunction with a phacoemulsification procedure under simulated clinical conditions. While the expected pharmacological effects of the miotic occurred, no significant ocular or retinal toxicity was observed.

No studies evaluating carcinogenic, mutagenic or teratogenic potential have been performed. Studies in mice given carbachol showed no direct or indirect reproductive toxic effects.

Other particulars

Shelf life

Do not use after the expiry date stated on the pack.

Special storage instructions

Store at a temperature of 15–30°C.

Open each ampoule only in a sterile environment (see “Posology/Administration”).

Note

Any solution left-over after application should be discarded.

Marketing authorisation number

37884 (Swissmedic).

Marketing authorisation holder

Alcon Switzerland SA, Risch, Switzerland.

Information last updated in

April 2016.

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Product Description	Company Minimum pack size	Price CHF	Dispensing category Reimbursement category
MIOSTAT solution for injection S01EB02 Carbachol	Alcon Switzerland SA 12 x 1.5 mL ampoules		B