MINIMS® ATROPINE EYE DROPS

NAME OF THE MEDICINE
Atropine sulphate

Structural formula:

Molecular formula: \((C_{17}H_{23}NO_3)_2H_2SO_4.H_2O\)

Molecular weight: 694.8

CAS number: 55-48-1 (anhydrous), 5908-99-6 (monohydrate)

DESCRIPTION
Minims Atropine Eye Drops are clear, colourless sterile eye drops containing atropine sulphate 1% w/v as well as hydrochloric acid and purified water. No preservatives are contained in the formulation.

PHARMACOLOGY
Atropine is a belladonna alkaloid. Atropine sulphate acts in the eye to block the action of acetylcholine, relaxing the cholinergically innervated sphincter muscles of the iris. This results in dilation of the pupil (mydriasis). The cholinergic stimulation of the accommodative ciliary muscle of the lens is also blocked. This results in paralysis of accommodation (cycloplegia).

Atropine sulphate has a slower onset and more prolonged effect than most other anticholinergics. Maximum mydriatic effect occurs around 30 to 40 minutes. Maximum cycloplegia takes several hours. Mydriasis usually lasts 7 to 12 days and cycloplegia persists for 14 days or longer. Onset of effects and duration may be prolonged in heavily pigmented eyes.

Pharmacokinetics
Atropine is readily absorbed from the gastrointestinal tract; it is also readily absorbed from mucous membranes, the eye, and to some extent through intact skin. It is rapidly cleared from the blood and is distributed throughout the body. It crosses the blood-brain barrier. It is incompletely metabolised in the liver and is excreted in the urine as unchanged drug and metabolites. A half-life of four hours has been reported.

INDICATIONS
Minims Atropine Eye Drops are indicated to produce mydriasis and cycloplegia.
CONTRAINDICATIONS
Minims Atropine Eye Drops are contraindicated in patients with hypersensitivity to any of the components of the preparation.
Minims Atropine Eye Drops are contraindicated in the presence of angle closure glaucoma or where angle closure glaucoma is suspected.

PRECAUTIONS
Minims Atropine Eye Drops are for topical ophthalmic use only. The solution should not be injected.
Due to the risk of precipitating an acute attack, atropine eye drops should not be used in cases of confirmed narrow-angle glaucoma or where latent narrow angle glaucoma is suspected. If in doubt, it is recommended that an alternative preparation be used.
Atropine eye drops should not be used in the following situations unless the clinical benefit outweighs the risk: keratoconus (atropine may produce fixed dilated pupil), synechiae between the iris and lens.
Due to the risk of provoking hyperpyrexia, atropine eye drops should be used with caution, especially in children, when the ambient temperature is high.
Persons with Down’s syndrome appear to have an increased susceptibility to the actions of atropine, whereas those, with albinism may be resistant.
Systemic absorption of atropine may be reduced by compressing the lacrimal sac at the medial canthus for a minute during and following the instillation of the drops. (This blocks the passage of the drops via the naso-lacrimal duct to the wide absorptive area of the nasal and pharyngeal mucosa. It is especially advisable in children.)

Use in Pregnancy: (Category A)
Atropine sulphate may be systemically absorbed after ocular administration; however, significant effects on the foetus have not been reported. Nevertheless caution is advised.

Use in Lactation:
Systemically absorbed atropine sulphate is distributed into breast milk in very small amounts. It may cause adverse effects, such as rapid pulse, fever, or dry skin, in breastfeeding infants of mothers using ophthalmic atropine.

Paediatric Use:
Children may be more susceptible to the adverse effects of atropine. Therefore atropine eye drops should be used with caution in this population. An increased susceptibility to atropine has been reported in infants and young children and in children with blonde hair, blue eyes, Down’s syndrome, spastic paralysis, or brain damage; therefore atropine should be used with great caution in these patients.
Atropine eye drops are not recommended in infants aged less than 3 months due to the possible association between induced cycloplegia and the development of amblyopia.
Use in the Elderly:
Minims Atropine Eye Drops should be used with caution in elderly patients as they may be more susceptible to the effects of atropine thus increasing the potential for systemic side effects.

Effects on Fertility; Carcinogenicity and Genotoxicity:
Studies have not been performed in either animals or humans to evaluate the potential carcinogenic, genotoxic or fertility impairing effects of atropine.

Interactions with Other Medicines
Although negligible Atropine passes into the bloodstream after ocular instillation, drug interactions are nevertheless possible.

The interactions observed with Atropine administered by any route should therefore be taken into account.

Anticholinergics: If significant systemic absorption of ophthalmic atropine occurs, concurrent use of other anticholinergics or medications with anticholinergic activity (eg. amantadine, some antihistamines, butyrophenones and phenothiazines, and tricyclic antidepressants) may result in potentiated anticholinergic effects.

Antiglaucoma agents. (Cholinergic, long acting, ophthalmic.) Concurrent use with atropine may antagonise the antiglaucoma and miotic actions of ophthalmic long acting cholinergic antiglaucoma agents. Concurrent use with atropine may also antagonise the antiaccommodative convergence effects of these medications when they are used for the treatment of strabismus.

Antmyasthenics, potassium citrate, potassium supplements. If significant systemic absorption of ophthalmic atropine occurs, concurrent use may increase the chance of toxicity and/or side effects of these systemic medications because of the anticholinergic induced slowing of gastrointestinal motility.

Carbachol, physostigmine or pilocarpine. Concurrent use with atropine may interfere with the antiglaucoma action of carbachol, physostigmine or pilocarpine. Also, concurrent use may counteract the mydriatic effect of atropine; however this counteraction may be used to therapeutic advantage.

Central nervous system depression producing medications. If significant absorption of systemic atropine occurs, concurrent use of medications having CNS effects, such as antiemetic agents, phenothiazines, or barbiturates, may result in opisthotonos, convulsions, coma and extrapyramidal symptoms.

Effects on Ability to Drive and Use Machines
Minims Atropine Eye Drops may cause transient blurring of vision on instillation. Patients should be advised not to drive or operate hazardous machinery until vision is clear.

ADVERSE EFFECTS
Adverse effects rarely occur with ocular use of atropine, however the following have been reported:

Ophthalmic. Blurred vision, local irritation, allergic conjunctivitis or blepharoconjunctivitis, contact dermatitis, eczematous dermatitis, increased intraocular pressure. May precipitate narrow angle glaucoma.
Systemic. Systemic reactions may occur after ocular instillation of these anticholinergic drugs, particularly in children or elderly patients. Symptoms of systemic toxicity include dryness of the mouth and skin, flushing, fever, rash, thirst, tachycardia, irritability, hyperactivity, ataxia, confusion, somnolence, hallucinations and delirium.

**DOSAGE AND ADMINISTRATION**

Adults (including the elderly):
One drop to be instilled into the eye, or as required.

Systemic absorption of atropine may be reduced by compressing the lacrimal sac at the medial canthus for a minute during and following the instillation of the drops. (This blocks the passage of the drops via the naso-lacrimal duct to the wide absorptive area of the nasal and pharyngeal mucosa. It is especially advisable in children.).

Each Minims Atropine Eye Drops unit should be discarded after a single use.

**OVERDOSE**

Systemic reactions to topical atropine are unlikely at normal doses. Signs of overdosage are similar to those described as systemic effects (see Adverse Effects).

In the event of atropine overdose, treatment is supportive. Supportive therapy may include oxygen and assisted respiration; cool water baths for fever, especially in children; and catheterisation for urinary retention. In infants and small children, the body surface should be kept moist.

Diazepam may be given to control marked excitement and convulsions.

**PRESENTATION AND STORAGE CONDITIONS**

**Presentation:** Minims Atropine Eye Drops 1% (10mg/mL) are supplied as single use clear colourless sterile eye drops in cartons of 20 units. Each unit contains approximately 0.5mL of solution.

**Storage Conditions:** Store at 2°C to 8°C. (Refrigerate. Do not freeze.). Do not expose to strong light.

Each Minims Atropine Eye Drops unit should be discarded after a single use.

**NAME AND ADDRESS OF SPONSOR**

Bausch & Lomb (Australia) Pty Limited
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North Ryde NSW 2113

**POISION SCHEDULE**

S4 – Prescription Only Medicine

**DATE OF APPROVAL**

Approved by the Therapeutic Goods Administration: 11 March 2008