# 1 NAME OF THE MEDICINAL PRODUCT

Pilocarpine Eye Drops 2.0% w/v

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Excipient(s) with known effect

Pilocarpine Hydrochloride 20 mg/ml also contains Benzalkonium Chloride.

For a full list of excipients, see section 6.1

## 3. PHARMACEUTICAL FORM

Eye Drops.

# 4. CLINICAL PARTICULARS

## 4.1 Therapeutic Indications

Pilocarpine is a direct acting miotic indicated for:

- chronic simple glaucoma.
- acute (closed angle) glaucoma alone, or in conjunction with other agents to decrease intra-ocular pressure prior to surgical treatment.
- miosis - to counteract the effects of cycloplegic or mydriatic eye drops.

## 4.2. Posology and method of administration

Posology

**Adults and the elderly**

a) In the treatment of open angle glaucoma, the dosage is one or two drops every six hours or as prescribed by the physician.

The strength of the preparation and the frequency of use are determined by the severity of the condition and the response to treatment.

b) When used prior to surgery for acute attacks of closed-angle glaucoma, the dosage is one drop every five minutes until miosis is obtained or as directed by the physician.

c) To overcome weaker mydriatics, the normal dosage is one drop every five minutes until the effect is counteracted or as directed by the physician.

**Paediatric population**

Based on the infrequency of reports of adverse events in children, and the extensive experience of use of pilocarpine in childhood glaucoma, concentrations of up to 2% may be safely used in children. Currently available data are described in section 5.1 but no recommendation on a posology can be made.

Treatment should be started with the lowest available dose and concentration in patients under 18 years of age. Depending on clinical response and tolerability, the dose may be increased up to the maximum recommended adult dosage of the 2% pilocarpine eye drop solution. Directly after administration of any dose, the lacrimal punctum should be occluded for one minute with a finger to limit systemic exposure.

## 4.3. Contraindications

- Hypersensitivity to any component.
- Acute iritis
- Anterior uveitis
- Some forms of secondary glaucoma
- Soft contact lenses.

Hypersensitivity to the active substances(s) or to any of the excipients listed in section 6.1.

## 4.4 Special warnings and precautions for use

Although rare, the possibility of systemic absorption should be considered especially in the treatment of acute closed-angle glaucoma where higher doses are administered. It should be used with caution in patients with bronchial asthma, peptic ulceration, urinary tract obstruction, Parkinson's disease, acute heart failure and hypertension.

Fundus examination is advised in all patients before starting pilocarpine therapy since retinal detachment has been associated with the use of miotics in susceptible individuals and those with pre-existing retinal disease.

Regular monitoring of visual fields and intra-ocular pressure should be carried out in patients on long term therapy with pilocarpine for chronic simple glaucoma.

## 4.5 Interaction with other medicinal products and other forms of interaction

If systemic absorption occurs, pilocarpine may enhance the effects of alcohol and anticholinesterases and diminish the effects of anticholinergics. The effects of pilocarpine may be enhanced by anticholinesterases, MAOI's, phenothiazines, antihistamines and tricyclic antidepressants. Adrenergic blockers may decrease the effects of pilocarpine.

Paediatric population

Interaction studies have only been performed in adults.

## 4.6. Fertility, Pregnancy and Lactation

Pregnancy

Safety of pilocarpine for use during pregnancy has not been established. Ophthalmic pilocarpine may be systemically absorbed and mothers using the drug may give birth to infants with signs mimicking neonatal meningitis such as restlessness, convulsions, diaphoresis and hypothermia. Pilocarpine should therefore only be used during pregnancy when essential.

Breast-feeding

Safety of pilocarpine for use during lactation has not been established and it should therefore only be used when clearly indicated. It is not known whether pilocarpine is excreted in breast milk. The possibility of systemic absorption however, should be borne in mind.

## 4.7 Effects on Ability to Drive and Use Machines

The miotic effects of pilocarpine causes difficulty in adapting to the dark. Caution is therefore necessary if driving or operating machinery in poorly lit conditions. Pilocarpine impairs accommodation by paralysis or spasm and patients should not drive or operate machinery if they experience blurred vision.

## 4.8. Undesirable effects

Adverse drug reactions from clinical trials are listed by MedDRA system organ class. Within each system organ class, the adverse drug reactions are ranked by frequency, with the most frequent reactions first. In addition, the corresponding frequency category for each adverse drug reaction is based on the following convention: very common (≥1/10); common (≥1/100 to <1/10); uncommon (≥1/1,000 to <1/100); rare (≥1/10,000 to <1/1,000); very rare (<1/10,000), not known (cannot be estimated from the available data).

| System Organ Class | Frequency | Undesirable effect |
|---|---|---|
| Eye disorders | Common | decreased visual acuity in poor illumination (frequently experienced by older individuals and in those patients with lens opacity), itching, smarting (discomfort) and burning, sensitisation of the lids and conjunctival vascular congestion, superficial keratitis, ciliary spasm, blurred vision, induced myopia, transient myopia, lens changes with chronic use, increased pupillary block, vitreous haemorrhages , retinal detachments. |
| | rare | lacrimation |
| Nervous system disorder | Common | Headache and browache(especially in younger patients who have recently initiated therapy). |
| | rare | sweating, increased salivation, tremor |
| Cardiac disorders | rare | changes in cardiac rhythm |
| Vascular disorders | rare | changes in blood pressure |
| Respiratory, thoracic and mediastinal disorders | rare | bronchial spasm, pulmonary oedema |
| Gastrointestinal disorders | rare | nausea, vomiting and diarrhoea |

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the Yellow Card Scheme Website: http://www.mhra.gov.uk/yellowcard.

## 4.9 Overdose

If pilocarpine is accidentally ingested, emesis should be induced or gastric lavage performed. The patient should be monitored for signs of pilocarpine toxicity such as increased salivation and sweating, lacrimation, nausea,

vomiting and diarrhoea. If these occur, therapy with an anticholinergic such as atropine may be required.

# 5. PHARMACOLOGICAL PROPERTIES

## 5.1. Pharmacodynamic properties

**Pharmacotherapeutic group**: parasympathomimetics,
**ATC code:** S01EB01

Pilocarpine is an alkaloid of natural plant origin, which is a direct-acting cholinergic agonist. It acts primarily at muscarinic receptor sites both peripherally and centrally, affecting smooth muscle, the cardiovascular system and exocrine glands.

The precise mechanism by which pilocarpine reduces intra-ocular pressure has not been established, though it is believed to involve direct stimulation of the longitudinal muscle of the ciliary body, which in turn affects the scleral spur, widening the trabecular spaces and allowing for increased aqueous flow. Pilocarpine may also decrease aqueous formation with long term administration. Due to its activity at the muscarinic receptor sites of the ciliary muscles and iris sphincter, pilocarpine causes varying degrees of accommodation spasm and pupillary constriction.

Paediatric population

There are literature reports of the ocular use of pilocarpine in concentrations up to 2% in patients aged 1 month and older. However, information on the dose and strength used is limited. Safety data do not suggest any significant safety issues in children, or any difference between the safety profiles of pilocarpine in children and adults.

## 5.2 Pharmacokinetic properties

Onset of miosis after topical administration of a 1% solution of pilocarpine hydrochloride or nitrate to the conjunctival sac occurs within 10-30 minutes, with maximal effect within 30 minutes. Miosis usually persists for 4-8 hours, rarely, up to 20 hours. Reduction of intra-ocular pressure is evident within 60 minutes, peaks within 75 minutes and, depending on the concentration of pilocarpine used, persists for 4-14 hours. Spasms of accommodation commence in about 15 minutes and persist for 2-3 hours.

## 5.3 Preclinical safety data

None available.

# 6. PHARMACEUTICAL PARTICULARS

## 6.1 List of excipients

Benzalkonium Chloride Solution BP
Purified Water BP

## 6.2 Incompatibilities

Soft contact lenses absorb water soluble compounds such as pilocarpine and its salts and the preservative benzalkonium chloride, and should therefore not be worn when administering pilocarpine eye drops.

## 6.3 Shelf life

24 months from manufacture.
28 days from first opening.

## 6.4 Special precautions for storage

Store upright below 25°C in a dry place away from strong light.

## 6.5 Nature and contents of container

Plastic tamper evident eye dropper bottle assembly. Pack size l0ml.

## 6.6 Special precautions for disposal

No special requirements for disposal.

Any unused medicinal product or waste material should disposed of in accordance with local requirements.

## 7. MARKETING AUTHORISATION HOLDER

Martindale Pharmaceuticals Ltd
T/a Martindale Pharma
Bampton Road,
Harold Hill,
Romford,
M3 8UG

## 8. MARKETING AUTHORISATION NUMBER(S)

PL 00156/0080

## 9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

6 June 1997

# 10 DATE OF REVISION OF THE TEXT

28/04/2016