SUMMARY-OF-PRODUCT-CHARACTERISTICS

1. NAME OF THE MEDICINAL PRODUCT

Moloxidex Eye Drops (Moxifloxacin & Dexamethasone Eye Drops)

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each ml contains:
Moxifloxacin Hydrochloride BP
Equivalent to Moxifloxacin ……..0.5%w/v
Dexamethasone sodium Phosphate USP
Eq. to Dexamethasone Phosphate …….0.1%w/v
Benzalkonium Chloride NF……0.01%w/v
(As preservative)
Sterile Aqueous Base…..……..Q.S.

3. PHARMACEUTICAL FORM

Dosage Form: Ophthalmic Solution
Description of Product: Pale yellow coloured, clear solution filled in 5ml plastic vials

4. Clinical particulars

4.1 Therapeutic indications

Moxifloxacin & Dexamethasone Eye Drops is indicated for steroid-responsive inflammatory ocular conditions for which a corticosteroid is indicated and where bacterial infection or a risk of bacterial ocular infection exists. The combination can also be used for post-operative inflammation and any other ocular inflammation associated with infection.

4.2 Posology and method of administration

One or two drops instilled into the conjunctival sac(s), every 4 to 6 hours. During the initial 24 to 48 hours, the dosage may be increased to 1 or 2 drops every two hours. Frequency must be decreased gradually or warranted by improvement in clinical signs. Care should be taken not to discontinue the therapy prematurely.

4.3 Contraindications

Moxifloxacin & Dexamethasone Eye Drops is contraindicated in epithelial herpes simplex keratitis (Dendritic keratitis), vaccinia, varicella, and in many other viral diseases of the conjunctiva and cornea, Mycobacterial infection of the eye and fungal diseases of ocular structures and in individuals hypersensitive to any of the components of the medication.

4.4 Special warnings and precautions for use

Prolonged use of steroids may result in glaucoma with damage to the optic nerve, defects in visual acuity and fields of vision, and posterior subcapsular cataract formation.

4.5 Interaction with other medicinal products and other forms of interaction

Concomitant use of Ergometrine Injection with the following medicinal products is not recommended:

No specific interaction studies have been performed with Moxifloxacin & Dexamethasone Eye Drops. Given the low systemic concentration of moxifloxacin following topical ocular administration of the medicinal product drug interactions are unlikely to occur.

4.6 Pregnancy and Lactation

Topically applied steroids can be absorbed systemically and have been shown to cause abnormalities of foetal development in pregnant animals. Although the relevance of this finding to human beings has not been established, the use of Moxifloxacin & Dexamethasone Eye Drops during pregnancy should be avoided.

Topically applied dexamethasone is not recommended in breastfeeding mothers, as it is possible that traces of dexamethasone may enter the breast milk.

4.7 Effects on ability to drive and use machines

Patients with blurred vision should refrain from driving a vehicle or operating machines.

4.8 Undesirable effects

The most frequently reported drug-related undesirable effects seen with moxifloxacin are conjunctival irritation, increased lacrimation, keratitis and papillary conjunctivitis.

4.9 Overdose

Overdose is unlikely to occur

5. PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Mechanism of Action

Moxifloxacin, a fourth-generation fluoroquinolone, inhibits the DNA gyrase and topoisomerase IV required for bacterial DNA replication, repair, and recombination.

Resistance

Resistance to fluoroquinolones, including moxifloxacin generally occurs by chromosomal mutations in genes encoding DNA gyrase and topoisomerase IV. In Gram-negative bacteria, moxifloxacin resistance can be due to mutations in mar (multiple antibiotic resistance) and the qnr (quinolone resistance) gene systems. Resistance is also associated with expression of bacteria efflux proteins and inactivating enzymes. Cross-resistance with beta-lactams, macrolides and aminoglycosides is not expected due to differences in mode of action.

Pharmacodynamics of Dexamethasone

Mechanism of action

Dexamethasone is a highly potent and long-acting glucocorticoid. It has an approximately 7 times greater anti-inflammatory potency than prednisolone, another commonly prescribed corticosteroid.

The actions of corticosteroids are mediated by the binding of the corticosteroid molecules to receptor molecules located within sensitive cells. Corticosteroid receptors are present in human trabecular meshwork cells and in rabbit iris ciliary body tissue.

Corticosteroids will inhibit phospholipase A2 thereby preventing the generation of substances

which mediate inflammation, for example, prostaglandins. Corticosteroids also produce a marked, though transient, lymphocytopenia. This depletion is due to redistribution of the cells, the T lymphocytes being affected to a greater degree than the B lymphocytes. Lymphokine production is reduced, as is the sensitivity of macrophages to activation by lymphokines. Corticosteroids also retard epithelial regeneration, diminish post-inflammatory neo-vascularisation and reduce towards normal levels the excessive permeability of inflamed capillaries.

5.2 Pharmacokinetic properties
Pharmacokinetics Moxifloxacin

Following topical ocular administration of moxifloxacin was absorbed into the systemic circulation. Plasma concentrations of moxifloxacin were measured in 21 male and female subjects who received bilateral topical ocular doses of the medicinal product 3 times a day for 4 days. The mean steady-state C_{max} and AUC were 2.7 ng/ml and 41.9 ng·hr/ml, respectively. These exposure values are approximately 1,600 and 1,200 times lower than the mean C_{max} and AUC reported after therapeutic 400 mg oral doses of moxifloxacin. The plasma half-life of moxifloxacin was estimated to be 13 hours.

Pharmacokinetics of of Dexamethasone
Absorption

When given topically to the eye, dexamethasone is absorbed into the aqueous humour, cornea, iris, choroid, ciliary body and retina. Systemic absorption occurs but may be significant only at higher dosages or in extended paediatric therapy. Up to 90% of dexamethasone is absorbed when given by mouth; peak plasma levels are reached between 1 and 2 hours after ingestion and show wide individual variations.

Biotransformation

Dexamethasone sodium phosphate is rapidly converted to dexamethasone within the circulation. Up to 77% of dexamethasone is bound to plasma proteins, mainly albumin. This percentage, unlike cortisol, remains practically unchanged with increasing steroid concentrations. The mean plasma half life of dexamethasone is 3.6 ± 0.9h.

Distribution

Tissue distribution studies in animals show a high uptake of dexamethasone by the liver, kidney and adrenal glands; a volume of distribution has been quoted as 0.58 l/kg. In man, over 60% of circulating steroids are excreted in the urine within 24 hours, largely as unconjugated steroid.

Elimination Dexamethasone also appears to be cleared more rapidly from the circulation of the foetus and neonate than in the mother; plasma dexamethasone levels in the foetus and the mother have been found in the ratio of 0.32:1.

5.3 Preclinical safety data

The use of corticosteroids, including Dexamethasone sodium phosphate 0.1% w/v Eye Drops, solution and its derivatives, in ophthalmology is well established. Little relevant toxicology has

been reported, however, the breadth of clinical experience confirms its suitability as a topical ophthalmic agent.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Borax, Boric Acid, Sodium Chloride, Hydroxypropyl Betacyclodextrin, Benalkonium Chloride Solution

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

24 months

6.4 Special precautions for storage

Store below 30°C. Do not freeze. Protect from light.

6.5 Nature and contents of container and special equipment for use, administration or implantation

Pale yellow coloured, clear solution filled in 5ml plastic vials

Secondary packaging

Each vial is packed in a unit carton.

6.6 Special precautions for disposal and other handling

No special requirements

7. APPLICANT/MANUFACTURER

NITIN LIFESCIENCES LIMITED
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