GATIQUIN-P Eye Drops (Gatifloxacin 0.3% + Prednisolone acetate 1%)

**Composition**

- Gatifloxacin .................. 0.3% w/v
- Prednisolone Acetate ........... 1.0% w/v
- Benzalkonium Chloride (as preservative) .... 0.006% w/v
- Sterile aqueous vehicle ........... q.s.

**Dosage Form**

Ophthalmic suspension

**Pharmacology**

- **Pharmacodynamics**

GATIQUIN-P ophthalmic suspension is a combination of gatifloxacin, a fluoroquinolone antimicrobial, and prednisolone, a potent corticosteroid. Ocular inflammation and infection often coexist. Combination of antibiotic-steroid exerts efficacy in resolving both infection and inflammation.

*Gatifloxacin*

Gatifloxacin is an 8-methoxyfluoroquinolone with a 3-methylpiperazinyl substituent at C7. The antibacterial action of gatifloxacin results from inhibition of DNA gyrase and topoisomerase IV. DNA gyrase is an essential enzyme that is involved in the replication, transcription and repair of bacterial DNA. Topoisomerase IV is an enzyme known to play a key role in the partitioning of the chromosomal DNA during bacterial cell division. The mechanism of action of fluoroquinolones, including gatifloxacin, is different from that of aminoglycoside, macrolide, and tetracycline antibiotics. Therefore, gatifloxacin may be active against pathogens that are resistant to these antibiotics and these antibiotics may be active against pathogens that are resistant to gatifloxacin. There is no cross-resistance between gatifloxacin and the aforementioned classes of antibiotics. Cross-resistance has been observed between systemic gatifloxacin and some other fluoroquinolones. Resistance to gatifloxacin in vitro develops via multiple-step mutations. Resistance to gatifloxacin in vitro occurs at a general frequency of between $1 \times 10^{-7}$ to $10^{-10}$.

Gatifloxacin has been shown to be active against most strains of the following organisms both in vitro and clinically, in conjunctival infections as described below:

- **Aerobes, Gram-Positive**
  - Corynebacterium propinquum*
  - Staphylococcus aureus
  - Staphylococcus epidermidis
  - Streptococcus mitis*
  - Streptococcus pneumoniae
**Aerobes, Gram-Negative**

Haemophilus influenzae  
*Efficacy for this organism was studied in fewer than ten infections.*

The following in vitro data are available, but their clinical significance in ophthalmic infections is unknown. The safety and effectiveness of gatifloxacin ophthalmic solution in treating ophthalmic infections due to the following organisms has not been established in adequate and well-controlled clinical trials. The following organisms are considered susceptible when evaluated using systemic breakpoints. However, a correlation between the in vitro systemic breakpoint and ophthalmological efficacy has not been established. The following list of organisms is provided as guidance only in assessing the potential treatment of conjunctival infections. Gatifloxacin exhibits in vitro minimal inhibitory concentrations (MICs) of 2μg/mL or less (systemic susceptible breakpoint) against most (≥ 90%) strains of the following ocular pathogens:

**Aerobes, Gram-Positive**

Listeria monocytogenes  
Staphylococcus saprophyticus  
Streptococcus agalactiae  
Streptococcus pyogenes  
Streptococcus viridans Group  
Streptococcus Groups C, F, G

**Aerobes, Gram-Negative**

Acinetobacter lwoffii  
Enterobacter aerogenes  
Enterobacter cloacae  
Escherichia coli  
Citrobacter freundii  
Citrobacter koseri  
Haemophilus parainfluenzae  
Klebsiella oxytoca  
Klebsiella pneumoniae  
Moraxella catarrhalis  
Morganella morganii  
Neisseria gonorrhoeae  
Neisseria meningitidis  
Proteus mirabilis  
Proteus vulgaris  
Serratia marcescens  
Vibrio cholerae  
Yersinia enterocolitica

**Other Microorganisms**

Chlamydia pneumoniae  
Legionella pneumophila  
Mycobacterium marinum  
Mycobacterium fortuitum  
Mycoplasma pneumoniae

**Anaerobic Microorganisms**

Bacteroides fragilis
Clostridium perfringens

Clinical Studies
In a randomized, double-masked, multicentre clinical trial, where patients were dosed for 5 days, gatifloxacin 0.3% ophthalmic solution was superior to its vehicle on days 5 to 7 in patients with conjunctivitis and positive conjunctival cultures. Clinical outcomes for the trial demonstrated clinical cure of 77% (40/52) for the gatifloxacin-treated group versus 58% (28/48) for the placebo-treated group. Microbiological outcomes for the same clinical trial demonstrated a statistically superior eradication rate for causative pathogens of 92% (48/52) for gatifloxacin versus 72% (34/48) for placebo. Please note that microbiological eradication does not always correlate with clinical outcome in anti-infective trials.

In a randomized, double-masked, multicenter clinical trial of pediatric patients with bacterial conjunctivitis between birth and 31 days of age, patients were dosed with gatifloxacin or another anti-infective agent for 7 days. Clinical outcomes for the trial demonstrated clinical cure of 79% (44/56) for the gatifloxacin-treated group.

Prednisolone Acetate
Prednisolone acetate is a glucocorticoid that, on the basis of weight, has three to five times the anti-inflammatory potency of hydrocortisone. Glucocorticoids inhibit the oedema, fibrin deposition, capillary dilation and phagocytic migration of the acute inflammatory response, as well as capillary proliferation, deposition of collagen and scar formation.

Pharmacokinetics

Gatifloxacin
Gatifloxacin ophthalmic solution 0.3% or 0.5% was administered to one eye of 6 healthy male subjects, each in an escalated dosing regimen starting with a single two-drop dose, then two drops four times daily for 7 days, and finally two drops eight times daily for 3 days. At all-time points, serum gatifloxacin levels were below the lower limit of quantification (5 ng/mL) in all subjects.

Prednisolone Acetate
Prednisolone acetate has been shown to penetrate rapidly the cornea after topical application of a suspension preparation. Aqueous humour $T_{max}$ occurs between 30 and 45 minutes after instillation. The half-life of prednisolone acetate in human aqueous humor is approximately 30 minutes.

Indications

Gatifloxacin-Prednisolone ophthalmic suspension 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.

Ocular steroids are indicated in inflammatory conditions of the palpebral and bulbar conjunctiva, cornea and anterior segment of the globe where the inherent risk of steroid use in certain infective conjunctivitis is accepted to obtain a diminution in oedema and inflammation. They are also indicated in chronic anterior uveitis and corneal injury from chemical radiation or thermal burns or penetration of foreign bodies.

Prednisolone acetate is indicated for the short-term treatment of steroid-responsive inflammatory conditions of the eyes, after excluding the presence of viral, fungal and bacterial pathogens in adults.

The use of a combination drug with an anti-infective component is indicated where the risk of infection is high or where there is an expectation that potentially dangerous numbers of bacteria will be present in the eyes. The combination can also be used for post-operative inflammation and any other ocular inflammation associated with infection.
Dosage And 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 one or two drops every 2 hours. Frequency must be decreased gradually or warranted by improvement in clinical signs. Care should be taken not to discontinue the therapy prematurely.

Contraindications

- **Gatifloxacin**
  Gatifloxacin is contraindicated in patients with a history of hypersensitivity to gatifloxacin, to other quinolones or to any of the components in this medication.

- **Prednisolone Acetate**
  Prednisolone acetate is contraindicated in acute untreated purulent ocular infections, in most viral diseases of the cornea and conjunctiva including epithelial herpes simplex keratitis (dendritic keratitis), vaccinia, varicella, and also in mycobacterial infection of the eye and fungal diseases of ocular structures. GATIQUIN-P ophthalmic suspension is also contraindicated in individuals with known or suspected hypersensitivity to any of the ingredients of this preparation and to other quinolones or corticosteroids.

Warnings And Precautions

- **General**
  For topical ophthalmic use only. Not for injection.
  In patients receiving systemic quinolones, including gatifloxacin, serious and, occasionally, fatal hypersensitivity (anaphylactic) reactions, some following the first dose, have been reported. Some reactions were accompanied by cardiovascular collapse, loss of consciousness, angio-oedema (including laryngeal, pharyngeal or facial oedema), airway obstruction, dyspnoea, urticaria and itching. If an allergic reaction to gatifloxacin occurs, discontinue the drug. Serious acute hypersensitivity reactions may require immediate emergency treatment. Oxygen and airway management should be administered as clinically indicated. As with other anti-infectives, prolonged use may result in the overgrowth of non-susceptible organisms, including fungi. If super-infection occurs discontinue use and institute alternative therapy. Whenever clinical judgment dictates, the patient should be examined with the aid of magnification, such as slit-lamp biomicroscopy and, where appropriate, fluorescein staining. Patients should be advised not to wear contact lenses if they have signs and symptoms of bacterial conjunctivitis. Prolonged use of corticosteroids may result in posterior sub-capsular cataract formation and may increase intraocular pressure in susceptible individuals, resulting in glaucoma, with damage to the optic nerve, defects in visual acuity and fields of vision, and in posterior sub-capsular cataract formation. Prolonged use may also suppress the host immune response and, thus, increase the hazard of secondary ocular infections. Various ocular diseases and long-term use of topical corticosteroids have been known to cause corneal and scleral thinning. Use of topical corticosteroids in the presence of thin corneal or scleral tissue may lead to perforation.
  Acute purulent infections of the eye may be masked or the activity enhanced by the presence of corticosteroid medication.
  If this product is used for 10 days or longer, intraocular pressure should be routinely monitored even though
it may be difficult in children and uncooperative patients. Steroids should be used with caution in the presence of glaucoma. Intraocular pressure should be checked frequently.

The use of steroids after cataract surgery may delay healing and increase the incidence of bleb formation. Posterior sub-capsular cataract formation has been reported after heavy or protracted use of topical ophthalmic corticosteroids.

Use of ocular steroids may prolong the course and may exacerbate the severity of many viral infections of the eye (including herpes simplex). Employment of a corticosteroid medication in the treatment of patients with a history of herpes simplex requires great caution; frequent slit-lamp microscopy is recommended. As fungal infections of the cornea are particularly prone to develop coincidentally with long-term local corticosteroid applications and fungal invasion may be suspected in any persistent corneal ulceration where a corticosteroid has been used or is in use.

Systemic adverse events may occur with extensive use of topical steroids; punctal occlusion may be recommended.

The possibility of adrenal suppression should be considered with prolonged, frequent, use of high-dose topical steroids, particularly in infants and children.

### Visual Disturbance

Visual disturbance may be reported with systemic and topical corticosteroid use. If a patient presents with symptoms such as blurred vision or other visual disturbances, the patient should be considered for referral to an ophthalmologist for evaluation of possible causes which may include cataract, glaucoma or rare diseases such as central serous chorioretinopathy (CSCR) which have been reported after use of systemic and topical corticosteroids.

The preservative in GATIQUIN-P ophthalmic suspension, benzalkonium chloride, may be absorbed by and cause discoloration of soft contact lenses. Patients wearing soft contact lenses should be instructed to remove contact lenses prior to administration of the solution and wait at least 15 minutes after instilling GATIQUIN-P before reinserting soft contact lenses.

### Effects on Ability to Drive and use Machines

There may be short-lasting blurring of vision upon instillation. If affected, the patient should not use machinery/electric tools or drive until vision has returned to normal.

### Drug Interactions

**Gatifloxacin**

Specific drug interaction studies have not been conducted with gatifloxacin ophthalmic solution. Limited information is available on the concurrent use of gatifloxacin with other ophthalmic products.

**Prednisolone Acetate**

None known.

Co-treatment with CYP3A inhibitors, including cobicistat-containing products, is expected to increase the risk of systemic side-effects. The combination should be avoided unless the benefit outweighs the increased risk of systemic corticosteroid side-effects, in which case patients should be monitored for systemic corticosteroid side-effects.

### Pregnancy

**Teratogenic Effects**

**Pregnancy Category C**

As there are no adequate and well-controlled studies in pregnant women, GATIQUIN-P ophthalmic...
suspension should be used during pregnancy only if the potential benefit justifies the potential risk to the foetus.

### Lactation

It is not known whether gatifloxacin-prednisolone is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when GATIQUIN-P ophthalmic suspension is administered to a nursing mother.

### Paediatric Use

Safety and effectiveness in paediatric patients have not been established.

### Geriatric Use

No overall differences in safety or effectiveness have been observed between elderly and younger patients.

### Undesirable Effects

Undesirable effects have occurred with steroid/anti-infective combination drugs, which can be attributed to the steroid component, the anti-infective component, or the combination which are described below:

### Gatifloxacin

The following serious adverse reactions are described elsewhere in the labeling:
- **Hypersensitivity**
- **Growth of Resistant Organisms with Prolonged Use**
- **Corneal Endothelial Cell Injury**

**Clinical Studies Experience**

Because clinical studies are conducted under widely varying conditions, adverse reaction rates observed in the clinical studies of a drug cannot be directly compared to rates in the clinical studies of another drug and may not reflect the rates observed in practice.

The most frequently reported adverse events in the overall study population were conjunctival irritation, increased lacrimation, keratitis and papillary conjunctivitis. These events occurred in approximately 5-10% of patients. Other reported reactions occurring in 1-4% of patients were chemosis, conjunctival haemorrhage, dry eye, eye discharge, eye pain, eyelid oedema, headache, red eye, reduced visual acuity, and taste disturbance.

An additional adverse reaction reported with gatifloxacin ophthalmic solution in other clinical studies includes worsening of the conjunctivitis.

The following adverse reactions have been identified during post-approval use of gatifloxacin ophthalmic solution 0.3%. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure. These reactions include: anaphylactic reactions and angioedema (including pharyngeal, oral or facial edema), blepharitis, dyspnea, eye pruritus, eye swelling (including corneal and conjunctival edema), hypersensitivity, nausea, pruritus (including pruritus generalized), rash, urticaria, vision blurred.

### Prednisolone Acetate

The following adverse reactions have been identified during use of prednisolone ophthalmic suspension. Because reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure. Adverse reactions include elevation of intraocular pressure with possible development of glaucoma and...
infrequent optic nerve damage, posterior sub-capsular cataract formation, and delayed wound healing. The development of secondary ocular infection (bacterial, fungal, and viral) has occurred. Fungal and viral infections of the cornea are particularly prone to develop coincidentally with long-term applications of steroids. The possibility of fungal invasion should be considered in any persistent corneal ulceration where steroid treatment has been used.

Other adverse reactions reported with the use of prednisolone acetate ophthalmic suspension include: allergic reactions; dysgeusia; eye pain; foreign body sensation; headache; pruritus; rash; transient burning and stinging upon instillation and other minor symptoms of ocular irritation; urticaria; and visual disturbance (blurry vision).

Keratitis, conjunctivitis, corneal ulcers, mydriasis, conjunctival hyperaemia, loss of accommodation and ptosis have occasionally been reported following local use of corticosteroids. Corticosteroid-containing preparations have also been reported to cause acute anterior uveitis and perforation of the globe.

The following undesirable effects have been reported following use of Prednisolone ophthalmic suspension. Frequency categories: 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 available data).

**Immune system disorders**
Not known: Hypersensitivity, Urticaria

**Nervous system disorders**
Not known: Headache

**Eye disorders**
Not known: Intraocular pressure increased, Cataract (including subcapsular), Eye penetration (scleral or corneal perforation), foreign body sensation, ocular infection (including bacterial, viral and fungal infections), ocular stinging, eye irritation, ocular hyperaemia, vision blurred/visual impairment, mydriasis

**Gastrointestinal disorders**
Not known: Dysgeusia

**Skin and subcutaneous tissue disorders**
Not known: Pruritus, Rash

**Systemic**
Extensive topical use of corticosteroids may lead to systemic side effects.

If you experience any side effects, talk to your doctor or pharmacist or write to drugsafety@cipla.com. You can also report side effects directly via the national pharmacovigilance program of India by calling on 1800 180 3024. By reporting side effects, you can help provide more information on the safety of this product.

### Overdosage

**Gatifloxacin**
A topical overdosage of gatifloxacin is considered to be a remote possibility. Discontinue medication when heavy or protracted use is suspected.

**Prednisolone acetate**
There is no clinical experience of overdosage. Acute overdosage is unlikely to occur via the opthalmic route. If accidentally ingested, drink fluids to dilute. Clinically apparent signs and symptoms of an overdose of gatifloxacin-prednisolone ophthalmic suspension (punctate keratitis, erythema, increased lacrimation, oedema and eyelid itching) may be similar to adverse reaction effects seen in some patients. A topical overdose may be flushed from the eye(s) with warm tap
Incompatibility
None known.

Shelf-Life
2 years.

Storage And Handling Instructions
Store in a cool place. Protect from light.

Packaging Information
GATIQUIN-P Eye Drops: Vial of 10 ml

Information For Patients
Avoid contaminating the applicator tip with material from the eye, fingers or other source. Systemic quinolones, including gatifloxacin, have been associated with hypersensitivity reactions, even following a single dose. Discontinue use immediately and contact your physician at the first sign of a rash or allergic reaction.
If eye inflammation or pain persists longer than 48 hours or becomes aggravated, discontinue use of the medication and consult a physician.
This product is sterile when packaged. To prevent contamination, care should be taken to avoid touching the vial tip to the eyelids or to any other surface. The use of this vial by more than one person may spread infection. Keep the vial tightly closed when not in use. Keep out of the reach of children.
Contact lenses should be removed prior to application of GATIQUIN-P ophthalmic suspension and may be reinserted 15 minutes following its administration.

Last updated: October 2018
Last reviewed: October 2018

GATIQUIN-P Eye Drops

Source URL: https://ciplamed.com/content/gatiquin-p-eye-drops