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Neomycin and Polymyxin B sulfate and  
dexamethasone ophthalmic suspension USP

# NP-Dex

**Composition:**

Each ml contains:  
Neomycin sulfate USP.....5.0 mg  
Polymyxin B sulfate USP.....6,000 IU  
Dexamethasone USP.....1.0 mg  
Benzalkonium chloride solution NF.....0.01% w/v  
(As preservative)  
Sterile Aqueous base.....q.s.

**Excipient with known effect:**

This medication contains 0.1 mg benzalkonium chloride per unit volume (1 mL).

**Pharmaceutical form:**

Ophthalmic Solution

**Therapeutic indication:**

NP-DEX eye drops, suspension is indicated for short-term treatment of steroid-sensitive eye conditions when prophylactic antibiotic treatment is also required, after exclusion of the presence of fungi and virus disease.

**Dosage and method of administration:**Children and adults (including the elderly)

Apply one or two drops to each affected eye up to six times a day or, more frequently if necessary.

Hepatic and renal impairment

NP-Dex Collyre has not been studied in these populations. However, due to the low systemic absorption of the active substances after topical administration of this product, dose adjustment is not necessary.

**Mode of administration:**

For Ophthalmic use only. Not for injection or ingestion.

Shake the bottle well before use.

Once the cap is removed, if the tamper-evident pressure collar is loosened, remove it before using the product.

In order to avoid contamination of the dropper tip and suspension, care

dexamethasone on male or female fertility. Dexamethasone was free of adverse effects on fertility in a chorionic gonadotropin-based rat model.

**Pregnancy**

There are no or limited data on the use of NP-Dex eye drops in pregnant women.

Aminoglycoside antibiotics, such as neomycin, cross the placenta after intravenous administration in pregnant women. Non-clinical and clinical systemic exposure to aminoglycosides has been shown to induce ototoxicity and nephrotoxicity. At the low dose administered via this topical, neomycin is not expected to cause ototoxicity or nephrotoxicity following in utero exposure. NP-Dex eye drops, suspension is not recommended during pregnancy.

**Breastfeeding**

It is not known whether topical ophthalmic dexamethasone, neomycin or polymyxin B are excreted in breast milk. Since corticosteroids and systemic aminoglycosides can be distributed in milk, a risk to the breastfed child cannot be excluded.

**Effects on the ability to drive and use machines**

NP-Dex Collyre has no or negligible influence on the ability to drive and use machines. As with any eye drop, temporarily blurred vision or other visual disturbances can affect the ability to drive or use machines. If transient blurred vision occurs during instillation, the patient should wait for the vision to disappear before driving or using machines.

**Undesirable effects:**Security Profile Summary

In clinical trials with NP-DEX eye drops and NP-DEX ophthalmic ointment, the most common adverse reactions were eye discomfort, keratitis and eye irritation, occurring in 0.7% to 0.9% of patients.

**Overdose:**

Due to the steroid component, in diseases causing thinning of the cornea or sclera, the risk of perforation is higher, especially after long treatments.

The use of topical ophthalmic steroids may lead to an increase in intraocular pressure with optic nerve damage, reduction of acuity and visual field defects. It can also lead to the formation of a posterior subcapsular cataract.

Sensitivity to topically administered aminoglycosides may occur in some patients

Corticosteroids may impair glucose tolerance, which can lead to a new onset or exacerbation of diabetes mellitus.

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should be taken to ensure that the dropper tip does not touch the eyelids, the eye's environment or any other surface.

Nasolacrimal occlusion or gentle closure of the eyelid after administration is recommended. This can reduce systemic absorption of ocular drugs and lead to a decrease in systemic adverse effects.

**Contraindication:**

Hypersensitivity to the active substances or to any of the excipients. Herpes simplex keratitis.

Vaccinia, chickenpox and other viral infections of the cornea or conjunctiva.

Fungal diseases of eye structures or untreated parasitic eye infections.

Mycobacterial eye infections.

**Special warning and precaution for use:**

As with any antibacterial preparation, prolonged use can lead to an overgrowth of non-susceptible bacterial strains or fungi. In case of superinfection, appropriate treatment should be instituted.

Sensitivity to locally applied aminoglycosides may occur in some patients. Cross-sensitivity to other aminoglycosides may also occur. The severity of hypersensitivity reactions can range from local to generalized reactions such as erythema, itching, urticaria, rash, anaphylaxis, anaphylactoid reactions or bullous reactions. If there are signs of severe reactions or hypersensitivity, discontinue use of this product.

Patients using ophthalmic preparations containing neomycin sulfate should be advised to seek medical attention if eye pain, redness, swelling or irritation worsens or persists.

Serious adverse reactions, including neurotoxicity, ototoxicity and nephrotoxicity, have occurred in patients receiving systemic neomycin or when applied topically to open wounds or skin lesions. Nephrotoxic and neurotoxic reactions have also occurred with systemic polymyxin B. Caution is advised when used concomitantly with systemic aminoglycoside or polymyxin B therapy.

Prolonged use of ophthalmic corticosteroids may result in ocular hypertension and/or glaucoma, with optic nerve damage, reduced visual acuity and visual field defects and posterior subcapsular cataract formation.

The risk of corticosteroid-induced increase in intraocular pressure and/or cataract formation is increased in predisposed patients (e.g. diabetes).

Cushing's syndrome and/or adrenal suppression associated with systemic absorption of ocular dexamethasone may occur after continuous intensive or long-term treatment in predisposed patients, including children and patients treated with CYP3A4 inhibitors

**Pharmacological properties Properties****Pharmacodynamics Class**

Pharmacotherapeutics: ophthalmological; anti-infective.

**Mechanism of action:**

NP-Dex eye drops has a double effect: suppression of inflammatory symptoms by dexamethasone, a corticosteroid component, and an anti-infective effect due to the presence of two antibiotics, polymyxin B and neomycin.

Dexamethasone is a synthetic glucocorticoid with potent anti-inflammatory activity. Polymyxin B is a cyclic lipopeptide that penetrates the cell wall of gram-negative bacilli to destabilize the cytoplasmic membrane. It is generally less active against gram-positive bacteria. Neomycin is an aminoglycoside antibiotic that primarily exerts its effect on bacterial cells by inhibiting the assembly and synthesis of polypeptides on the ribosome.

Resistance mechanism

The resistance of bacteria to polymyxin B is chromosomal in origin and is rare. A modification of the phospholipids of the cytoplasmic membrane seems to play a role.

Resistance to neomycin occurs through several different mechanisms, including (1) alterations in the ribosomal subunit within the bacterial cell; (2) interference with the transport of neomycin in the cell, and (3) inactivation by a set of adenylating, phosphorylating and acetylating enzymes. Genetic information for the production of inactivating enzymes can be carried on the bacterial chromosome or plasmids.

**Pharmacokinetic properties**

Dexamethasone, like other corticosteroids, is absorbed rapidly after oral administration and has a biological half-life of approximately 190 minutes. Sufficient absorption may occur after topical application to the skin and eyes to produce systemic effects. Intraocular penetration of dexamethasone occurs in significant quantities and contributes to the effectiveness of dexamethasone in inflammatory diseases of the anterior segment.

Polymyxin B sulfate is not absorbed from the gastrointestinal tract or intact skin, although intact corneal epithelium prevents penetration into the corneal stroma, therapeutic concentrations penetrate the stroma after epithelial injury. Good stromal penetration occurs after epithelial abrasion after topical instillation, subconjunctival injection or corneal bath. No significant penetration of polymyxin B into the vitreous is demonstrable after parenteral or local administration of the drug.

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(including ritonavir and cobicistat). In these cases, treatment should be gradually discontinued.

To avoid the risk of worsening herpetic corneal disease, frequent examination of the slit lamp is essential.

Topical ophthalmic corticosteroids may slow the healing of corneal wounds. Topical NSAIDs are also known to slow or delay healing. Concomitant use of topical NSAIDs and topical steroids may increase the risk of healing problems.

Visual disturbances

Visual disturbances may be reported with systemic and topical use of corticosteroids.

Wearing contact lenses is not recommended when treating an eye infection. Therefore, patients should be advised not to wear contact lenses during treatment with NP-Dex eye drops.

Benzalkonium chloride can be absorbed by soft contact lenses and change their color. Remove contact lenses before application and wait at least 15 minutes before putting them back on.

Benzalkonium chloride can also cause eye irritation, especially if you have dry eye syndrome or corneal disorders. If you experience an abnormal sensation, tingling, or pain in the eyes after using this medicine, a doctor should be consulted.

**Interaction with other medicinal products and other forms of interaction:**

No interaction studies have been performed.

Concomitant use of topical steroids and topical NSAIDs may increase the risk of corneal healing problems.

CYP3A4 inhibitors (including ritonavir and cobicistat): may decrease dexamethasone clearance resulting in increased effects and adrenal suppression/Cushing's syndrome. The combination should be avoided unless the benefit outweighs the increased risk of systemic side effects of corticosteroids, in which case patients should be monitored for systemic effects of corticosteroids.

Concomitant and/or sequential use of an aminoglycoside (neomycin) and other systemic, oral or topical medicinal products that have neurotoxic, ototoxic or nephrotoxic effects may result in additive toxicity and should be avoided where possible.

If several ophthalmic drugs are used, the drugs should be administered at least 5 minutes apart. Eye ointments should be administered last.

**Pregnancy and lactation:**Fertility

There are no data available on the use of this drug affecting male or female fertility. Clinical data are limited to assess the effect of

Neomycin is poorly absorbed from the gastrointestinal tract and after topical administration, insufficient amount is absorbed to produce systemic effects. Absorption has been reported to occur from wounds and inflamed skin. After absorption, neomycin is rapidly excreted by the kidneys in active form.

**Pharmaceutical Details:****List of excipients**

Benzalkonium chloride, boric acid, sodium chloride, edetate disodium, hypromellose, Tween 80, hydrochloric acid, purified water, sodium hydroxide pellets.

**Incompatibilities:**

Not applicable.

**Conservation:**

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

**Conditions of prescription and supply**

List I

**Shelf Life:** 24 months

**Date of Revision:** December 2022

**Manufactured By:**

**Indiana Ophthalmics LLP**

135/136/137. G.I.D.C. Estate, Wadhwan City-363035,  
Gujarat, India.

**Manufactured for:**

**Alvita Pharma Pvt. Ltd.**