Ocurest®
Eye Drops

1. **Generic Name**

Phenylephrine

Naphazoline hydrochloride

Menthol

Camphor

2. **Qualitative and Quantitative composition**

Phenylephrine hydrochloride	0.12% w/v
Naphazoline hydrochloride	0.05% w/v
Menthol	0.005% w/v
Camphor	0.01% w/v

3. **Dosage form and strength**

Topical ophthalmic solution containing Phenylephrine hydrochloride 0.12% and Naphazoline hydrochloride 0.05%

4. **Clinical particulars**

4.1 Therapeutic indication

In patients of ocular congestion, redness, and inflammation of a non-infectious origin.

4.2 Posology and method of administration

One or two drops four times a day.

4.3 Contraindication

The use of OCUREST is contraindicated in patients with narrow angle glaucoma and on MAO inhibitor.

4.4 Special warnings and precautions for use

- The use of OCUREST should be with caution in patients with heart disease, hypertension or difficulty in urination due to enlargement of the prostate gland.
- Prolonged use of decongestants is associated with rebound congestion.

- The use of OCUREST should be discontinued If patient experiences pain, changes in vision, continued redness or irritation, or if the condition worsens, or persists for more than 72 hours.

4.5 Drug interactions

Although, clinically significant drug-drug interactions between OCUREST and systemically administered drugs are not expected but may occur when co administered with monoamine oxidase inhibitors or beta blockers.

4.6 Use in special population

- Pediatric: Safety and efficacy in children has not been established.
- Geriatric: Safety and efficacy in children has not been established.
- Liver impairment: There is no data available.
- Renal failure: Caution to be advised in patients with severe impaired renal function.
- Pregnancy and lactation: There are no well-controlled trials with OCUREST in pregnant and lactating women. Therefore, OCUREST should only be used if clearly indicated.

4.7 Effects on ability to drive and use machine

Patients should be cautioned against engaging in activities requiring complete mental alertness, and motor coordination such as operating machinery until their response to Ocurest is known.

4.8 Undesirable effects

The common side effects are: Eye irritation, Eye pain, Mydriasis, Periorbital edema, Ocular hyperemia, Vision blurred, Bradycardia,Tachycardia.

4.9 Overdose

There is limited experience of overdose with Ocurest drops. Initiate general symptomatic and supportive measures in all cases of overdosages where necessary.

5. Pharmacological properties

5.1 Mechanism of action

Phenylephrine hydrochloride is an α-1 adrenergic agonist drug that is used in ophthalmology mainly for its mydriatic effect. After topical application to the conjunctiva, phenylephrine acts directly on α-adrenergic receptors in the eye, producing contraction of the dilator muscle of the pupil and constriction of the arterioles in the conjunctiva.

Naphazoline ophthalmic drops causes constriction of blood vessels in the eyes. It also decreases itching and irritation of the eyes. Naphazoline constricts the vascular system of the

conjunctiva. It is presumed that this effect is due to direct stimulation action of the drug upon the alpha adrenergic receptors in the arterioles of the conjunctiva resulting in decreased conjunctival congestion.

Menthol primarily activates the cold-sensitive TRPM8 receptors in the skin. Menthol, after topical application, causes a feeling of coolness due to stimulation of 'cold' receptors by inhibiting Ca++ currents of neuronal membranes. It may also yield analgesic properties via kappa-opioid receptor agonism.

Camphor provides cooling and soothing effect**.**

5.2 Pharmacodynamic properties

Phenylephrine is a powerful vasoconstrictor. It is used as a nasal decongestant and cardiotonic agent. Phenylephrine is a postsynaptic α1-receptor agonist with little effect on β-receptors of the heart. Parenteral administration of phenylephrine causes a rise in systolic and diastolic pressures, a slight decrease in cardiac output, and a considerable increase in peripheral resistance; most vascular beds are constricted, and renal, splanchnic, cutaneous, and limb blood flows are reduced while coronary blood flow is increased. Phenylephrine also causes pulmonary vessel constriction and subsequent increase in pulmonary arterial pressure. Vasoconstriction in the mucosa of the respiratory tract leads to decreased edema and increased drainage of sinus cavities.

Naphazoline is a direct acting sympathomimetic adrenergic alpha-agonist used to induce systemic vasoconstriction, thereby decreasing nasal congestion and inducing constriction around the conjunctiva. Naphazoline ophthalmic causes constriction of blood vessels in the eyes. It also decreases itching and irritation of the eyes. Naphazoline constricts the vascular system of the conjunctiva. It is presumed that this effect is due to direct stimulation action of the drug upon the alpha adrenergic receptors in the arterioles of the conjunctiva resulting in decreased conjunctival congestion. Naphazoline belongs to the imidazoline class of sympathomimetics.

Menthol is a covalent organic compound made synthetically or obtained from peppermint or other mint oils. Menthol's ability to chemically trigger cold-sensitive receptors in the skin is responsible for the well-known cooling sensation that it provokes when inhaled, eaten, or applied to the skin. It should be noted that menthol does not cause an actual drop in temperature.

5.3 Pharmacokinetic properties

Phenylephrine has low oral bioavailability owing to irregular absorption and first-pass metabolism by monoamine oxidase in the gut and liver. When injected subcutaneously or intramuscularly it takes 10 to 15 minutes to act; subcutaneous and intramuscular injections

are effective for up to about 1 hour and up to about 2 hours, respectively. Intravenous injections are effective for about 20 minutes. Systemic absorption follows topical application

Systemic absorption has been reported after topical use of solutions of naphazoline. It is not given systemically, but it is readily absorbed from the gastrointestinal tract. Naphazoline instilled into the eye causes conjunctival vasoconstriction within 10 minutes and effects can last for up to 6 hours.

Camphor is readily absorbed from all administration sites. It is hydroxylated in the liver to yield hydroxy camphor metabolites which are then conjugated with glucuronic acid and excreted in the urine. Camphor crosses the placenta.

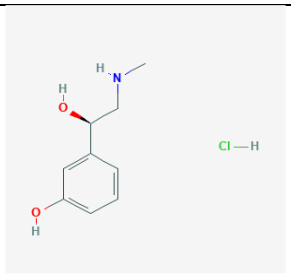
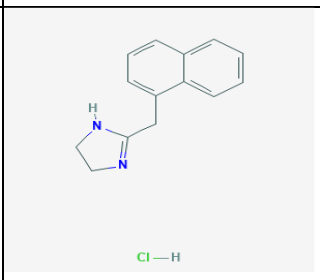
After absorption, menthol is excreted in the urine and bile as a glucuronide. The systemic absorption of camphor, menthol, and methyl salicylate from dermal patches containing all three ingredients has been studied. The absolute bioavailability of these compounds could not be determined from this study, but there did not appear to be any substantial systemic accumulation even after unrealistically high exposure for prolonged periods.

6. Nonclinical properties

6.1 Animal Toxicology or Pharmacology

Not required.

7. Description

	Phenylephrine hydrochloride	**Naphazoline hydrochloride**
Class	direct-acting sympathomimetic amine (Decongestant)	direct-acting sympathomimetic amine (Decongestant)
Chemical name	3-[(1*R*)-1-hydroxy-2-(methylamino) ethyl]phenol; hydrochloride	2-(naphthalen-1-ylmethyl)- 4,5-dihydro-1*H*- imidazole;hydrochloride
Structural formula		

Empirical formula	$C_9H_{14}ClNO_2$	$C_{14}H_{15}ClN_2$
Molecular weight	203.66 g/mol	246.73 g/mol

8. Pharmaceutical particulars

8.1 Incompatibilities

There are no known incompatibilities.

8.2 Shelf-life

36 months.

8.3 Packaging Information

OCUREST is available in a 10 ml lupolen vial

8.4 Storage and handling instructions

Store in cool and dry place.

9. Patient Counselling Information

9.1 Adverse reactions

Refer part 4.8

9.2 Drug Interactions

Refer part 4.8

9.3 Dosage

Refer part 4.5

9.4 Storage

Refer part 8.4

9.5 Risk factors

Refer part 4.4

9.6 Self-monitoring information

NA

9.7 Information on when to contact a health care provider or seek emergency help

Patient is advised to be alert for the emergence or worsening of the adverse reactions and contact the prescribing physician.

9.8 Contraindications

Refer part 4.3

10. Manufactured by CENTAUR PHARMACEUTICALS PVT. LTD.

11. Details of permission or license number with date

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