Medisearch Laboratories
(Bombay) Pvt. Ltd. (India)

SOC

STABILISED OXYCHLORO COMPLEX

THE SAFE, GENTLE OCULAR PRESERVATIVE

Maximum Protection in the Bottle...
Minimum Damage to the Eye Surface

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Protect your patients' eyes with the

SAFER DISAPPEARING Preservative

INTRODUCTION

The post-pandemic era has affected the lifestyle of millions of people worldwide. More people are exposed to digital devices such as laptops, mobile screens, tablets etc for longer hours which reduces the blinking rate. This leads to eye related complications such as eye fatigue, dry eyes, itchy eyes, etc. Dry eye disease affects hundreds of millions of people throughout the world and is one of the most frequent causes of patient visits to eye care practitioners.

Higher rates of dry eyes are reported in women compared to men, although the differences generally become significant only with increasing age, hormonal changes and gland dysfunction. All this explains why Dry Eye Syndrome is being taken seriously by all.

Many people are using, on a daily basis, or will soon begin using, one of the types of artificial tears on the market, all containing some kind of preservative.

An ideal eye drop formulation contains the active ingredient, buffer, preservative and other compatible excipients.
Changes in the quality of the active ingredients and excipients may alter the results of eye drops.

Buffers play a vital role in controlling pH and osmolarity, therefore providing better stability of eye drops.
Preservatives on the other hand make sure eye drops remain sterile throughout their shelf life and during usage.

Recent developments offer preservative-free formulations both in single-dose unims or multi-dose containers.
However these presentations are costlier to patients, have the potential for overdose and poses more challenges to prescribers.

Conventional multi-dose eye drops are preferred as they are more economical, user-friendly and clinically acceptable.

TYPES OF PRESERVATIVES

Multidose artificial lubricants typically require a preservative to prevent microbial growth, however chronic exposure of the ocular surface to preservatives may induce toxicity and adverse changes to the ocular surface.

Detergent-Type Preservatives: The surfactant preservatives derived from quaternary ammonium compounds: the most commonly used is Benzalkonium Chloride (BAK). They are old fashioned, tend to be very irritating and toxic for the conjunctiva and corneal epithelium, although there are currently many formulations containing them.

Oxidative-Type Preservatives: Scientific research offers new oxidative-type preservatives that are safer on the ocular surface with comparable efficacy and preservative action.

WHAT IS AN OXIDATIVE-TYPE PRESERVATIVE?

Preservatives are auxiliary substances that are added to active preparations in order to protect them from microbial contamination.

When they are exposed to the action of light, oxidative-type preservatives break down into natural tear components, thereby improving patient safety, whilst ensuring no contamination in the eye drop solution.

Oxidative-type preservatives act differently to detergent-type preservatives such as BAK, given that they are generally smaller molecules and penetrate the lipid membrane of microorganisms, altering their DNA, proteins and lipid components of bacterial cells. Oxidative-type preservatives, unlike detergent-type preservatives, can be neutralised by enzymes present in mammalian cells and do not tend to accumulate in the ocular epithelium.

This type of safer preservative system thus provides effective anti-microbial activity with a negligible toxicity potential.

WHY USE AN OXIDATIVE-TYPE PRESERVATIVE?

Doctors do not want to prescribe eye medications which, although effective, could cause adverse effects over time due to its preservative. Knowing the exact contents of the products they prescribe should be an Ophthalmologist's duty and is key to successful treatment.

An ophthalmic medication is much more than the active ingredient and its other ingredients can cause difficulties for many patients. This is the case not only for patients who use artificial tears excessively, but also for many patients who use products for a longer period of time.

Eye preparations comprise of the active ingredient, a preservative, the carrier, a viscosity regulator, balancers and stabilisers. Out of all of these, it is the preservative that has been blamed for causing different types of damage to the corneal epithelium, leading to a disruption of the composition of sugars and proteins comprising the glycocalyx. The repetition of this sequence means that the epithelium cannot keep the tear film in its place, and most often leads to some kind of disease of the ocular surface.

Most ophthalmic products contain some kind of preservative. In fact the US FDA requires the use of a preservative for all multi-dose ophthalmic containers. These produce an antimicrobial activity inside the container and prolong the shelf life. Research has shown that preservatives are necessary in multi-dose containers because bacterial contamination occurs when the eye drop is used at least twice a day.

The FDA uses a preservative effectiveness test as a standard. During the Preservative Effectiveness Test (PET), technicians prepare a standard concentration of common bacteria, such as *Escherichia coli, Pseudomonas aeruginosa* and *Staphylococcus aureus* and test it against each preservative. Inoculated tubes are then incubated at 30°C or 35°C for four weeks, with weekly examinations.

WHAT IS SOC?

SOC is an oxidative-type preservative that has long been successfully included in ophthalmic medications since 1990s. **Medisearch Laboratories** is the EXCLUSIVE global manufacturer of SOC currently.

Chemically, SOC is a mixture of Sodium Chlorite, Chlorate and traces of Chlorine Dioxide. When exposed to light, SOC dissociates in water, oxygen, sodium and chlorine free radicals. It is believed that these chlorine free radicals inhibit protein synthesis in microorganisms inside cells by means of the oxidation of Glutathione, which causes the cell death of microbes.

SOC is Medisearch's technological answer for prescribers who need well-preserved ophthalmic formulations that have negligible toxicity.

NATURAL COMPONENTS OF TEARS

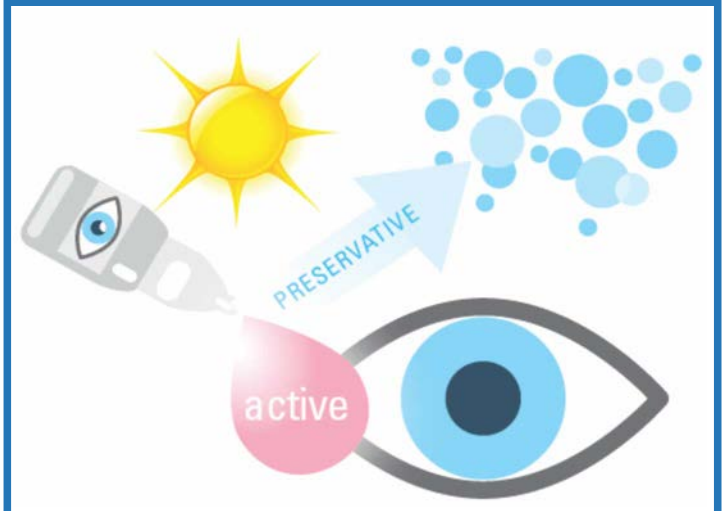
A preservative is considered effective if it reduces the concentration of bacteria to 0.1%, or less, from the initial concentration after two weeks and keeps the concentration of yeasts and moulds at, or below, their original concentration for the remaining two weeks.

SOC MECHANISM OF ACTION

SOC is an effective preservative with excellent tolerance and safety for sensitive structures of the eyeball tissue. It's preservative action keeps the contents of the eyedrop container free from pathogens and, when exposed to ultraviolet radiation (photolytic reaction), breaks down rapidly into sodium chloride, oxygen and water which are natural components of human tears. This reaction happens instantaneously, and therefore damage is not caused to the ocular tissue.

SOC : THE ADVANCED OCULAR PRESERVATIVE TECHNOLOGY
(STABILISED OXYCHLORO COMPLEX)

SOC is an oxidative-type preservative and a mixture of chlorine dioxide, chlorite and chlorate. When exposed to light, SOC dissociates rapidly into components naturally found in the human tears such as sodium chloride, oxygen and water, making it very well tolerated.



SOC provides nothing BUT
water, oxygen & natural electrolytes to eyes.

SOC is SAFE, EFFECTIVE, GENTLE and COMFORTABLE.

Medisearch Laboratories
(Bombay) Pvt. Ltd. (India)

Commercially available
SOC Preserved Eye Drops

BENEFITS OF SOC

SOC remains only in its original form when inside the multi-dose opaque eye drop container, ensuring an effective preservative action of the sterility of eye drops.

When it leaves the container as part of a drop, SOC reacts to light and rapidly breaks down into sodium chloride, oxygen and water without causing any significant cell damage on the ocular surface.

Studies have shown repeatedly that SOC is much safer on the ocular surface than eye drops preserved with BAK.

It's gentle action also means that it can be used as many times as necessary, with minimal adverse effects.

EFFICACY

SOC has a wide range of antimicrobial activity (antibacterial, antifungal and antiviral) and it has been shown that it is effective against the fungus Aspergillus.

SOC works even at very low concentrations in eye drops.

SOC has successfully passed PET tests in accordance with the standards of the European and US Pharmacopoeia for various ophthalmic formulations worldwide.

The use of SOC in multi-dose sterile ophthalmic formulations inhibits the growth of microorganisms that may have entered the solution during repeated instillations.

CONCLUSIONS

It is without any doubt that it is more beneficial for eye drop users to use completely preservative-free solutions. However, these are usually single dose formulations that are more expensive than most preserved eye drops available in the market.

SOC offers an attractive and cost-effective multi-dose eye drop formulation option for patients who require up to six doses per day (as in the case of artificial tears eye drops) or for those who use more than one drop to treat chronic eye diseases such as glaucoma and dry eyes.

In this context, oxidative-type preservatives appear to be the best option for eye drops, given that they are safe, practical and also cost-effective for patients.

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