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Kemin Pharma is committed to provide medical devices that meet or exceed our customers’ expectations of quality, safety, effectiveness and reliability. Our medical devices demonstrate high quality performance and utilize superior technology. We strive for continual improvement in all aspects of our medical devices. We are committed to comply with all regulatory requirements and to maintain a robust quality management system.
Patent submission for the first lutein-based dyes used for cataract and retinal surgery.

4 NEW PATENTS submitted in the last quarter of 2014

Employees hold, at least, a Master's Degree

>1/2

Solid scientific foundations with 8 scientific papers on Kemin Pharma's products published in peer-reviewed journals with high impact in Ophthalmology.¹-⁸

Business operations in more than 90 COUNTRIES

15 Technical Literatures released in only 2 Years

Expanding to new countries in Europe, Middle East, APAC and America.

KEMIN PHARMA
The most recent of the 6 business divisions. Created in 2013.

KEMIN INDUSTRIES
Global Company founded in 1961

8 MANUFACTURING PLANTS spread across the globe.

CONTINUOUS MEDICAL SUPPORT

1st

1 NEW INVENTION DISCLOSURES

Products distributed and sold to 13 COUNTRIES WORLDWIDE
KEMIN PHARMA’S ROBUST RESEARCH ON LUTEIN

Traditionally found in fruits and dark-green leafy vegetables

Extracted from Marigold, processed by Kemin with high quality standards

Primarily used as a natural colorant due to its orange-red color

Lutein and zeaxanthin are registered in Brazil, Europe and the US as natural dyes

Due to their exclusive distribution in the lens and in the macula lutea, lutein and zeaxanthin are believed to play a protective role in these tissues and to prevent several maculopathies.

Lutein absorbs blue light at wavelengths around 450 nm with a peak of absorption at 446 nm.¹¹

Potential photoprotection against light from endoilluminators

Blue-light filtering properties ⁹

Antioxidant effect ¹⁰⁻¹¹

Potential protection against free radicals during the surgery*

*Lutein is thought to scavenge ROS generated during inflammatory process and to interfere in intracellular pathways leading to the expression of various pro-inflammatory molecules.¹²,¹³

Aₘₐₓ = 446 nm

Lutein is thought to scavenge ROS generated during inflammatory process and to interfere in intracellular pathways leading to the expression of various pro-inflammatory molecules.¹²,¹³

Fractions of Ultraviolet (UV) radiation:
- UV B
- UV A2
- UV A1

Visible light spectrum:
- Ultraviolet
- Visible light
- Infrared

Aₘₐₓ = 446 nm
Efficacy of a lutein-based dye (Phacodyne™) for visualizing anterior capsulorhexis during cataract surgery by phacoemulsification

Soluble lutein in combination with brilliant blue as a new dye for chromovitrectomy

Lutein: A New Dye for Chromovitrectomy

Comparative clinical study [safety profile of crystalline lutein]

Comparative cytotoxicity study

Innovative lutein-based dye with proven physical MoA and excellent safety profile.

Following the rational and benefits of Lutein in the Human Eye, KEMIN Pharma developed a full range of Lutein based intraocular dyes, containing Lutein alone or using Lutein in combination with the “gold standard” synthetic dyes.

Lutein-based dyes interact through non-chemical bonding with surrogate intraocular membrane models without altering their molecular structure.
Efficacious alternative to products containing higher levels of synthetic dyes.

Phacodyne is an intraocular dye intended for use in cataract surgery to assist in capsulorhexis.

**Phacodyne contains**: Soluble lutein (1%); Trypan blue (0.04%); Inactive biologically compatible vehicle.

**How to Use**

- Pull and push the plunger to facilitate its movement.
- Create space inside the syringe by pushing its plunger back.
- Shake Vigorously for 5 seconds immediately prior to injection.

Allows the entire anterior lens capsule visualization in the absence of red reflex.

**Anterior Capsule staining** for cataract surgeries.

Intense green color optimal for staining contrast.
Double staining lutein-based heavy dye. Allows a quicker and less complex surgery.

Doubledyne is an intraocular dye intended for use in vitreoretinal surgery to facilitate the staining of the internal limiting membrane and/or epiretinal membrane.

**Doubledyne contains:** Soluble lutein (2%); Brilliant blue (0.05%); Trypan blue (0.15%); Inactive biologically compatible vehicle.

**HOW TO USE**
- **Pull and push the plunger to facilitate its movement.**
- **Create space inside the syringe by pushing its plunger back.**
- **Shake Vigorously for 5 seconds immediately prior to injection.**

**High density** provides a cohesive sinking and subsequent easier aspiration.

**Simultaneous ILM & ERM staining** for additional contrast.

**Selective posterior pole deposition** eliminates the need for vigorous dye flushing or fluid-air exchange.
Efficacious and cost-effective solution for ILM staining.

Retidyne is an intraocular dye intended for use in vitreoretinal surgery to facilitate the internal limiting membrane staining.

Retidyne contains: Soluble lutein (2%); Brilliant blue (0.05%); Inactive biologically compatible vehicle.

High density provides a cohesive sinking\(^7\) and subsequent easier aspiration.

Intense green color optimal for staining contrast.

Selective posterior pole deposition eliminates the need for vigorous dye flushing or fluid-air exchange.\(^7\)\(^8\)

**HOW TO USE**

- Pull and push the plunger to facilitate its movement.
- Create space inside the syringe by pushing its plunger back.
- Shake Vigorously for 5 seconds immediately prior to injection.
Unique product, multiple targets.
Diversified contrast due to innovative formulation.
Allows a quicker and less complex surgery.

Tripledyne is an intraocular dye intended for use in vitreoretinal surgery to facilitate triple staining of the vitreous, the internal limiting membrane and epiretinal membrane.

Tripledyne contains: Crystalline lutein (1.8%); Brilliant blue (0.05%); Trypan blue (0.15%); Inactive biologically compatible vehicle.

High density provides a cohesive sinking and subsequent easier aspiration.

Innovative triple staining.

Selective posterior pole deposition eliminates the need for vigorous dye flushing or fluid-air exchange.

Excellent Vitreous visualization due to Lutein crystals.

**HOW TO USE**

Shake Vigorously for 5 seconds immediately prior to injection.

Aspire up to 1 ml of liquid into the syringe.

Apply slowly and in a circular way directly to the vitreous.
Vitreous & ILM staining in one injection. Allows a quicker and less complex surgery.

Retidyne Plus is an intraocular dye intended for use in vitreoretinal surgery to facilitate dual staining of the vitreous and the internal limiting membrane.

Retidyne Plus contains: Crystalline lutein (1.8%); Brilliant blue (0.05%); Inactive biologically compatible vehicle.

**HOW TO USE**

Shake Vigorously for 5 seconds immediately prior to injection. Aspire up to 1 ml of liquid into the syringe. Apply slowly and in a circular way directly to the vitreous.

High density provides a cohesive sinking\(^\text{8}\) and subsequent easier aspiration.

Convenient simultaneous Vitreous & ILM staining.

Selective posterior pole deposition eliminates the need for vigorous dye flushing or fluid-air exchange.\(^7\)\(^-\)\(^8\)

Excellent Vitreous visualization due to Lutein crystals.
Staining by Crystalline lutein only. Intense orange color allows a clear visualization of the Vitreous for top performance vitrectomies.

Vitreodyne is an intraocular dye intended for use in vitreoretinal surgery to facilitate the vitreous staining.

**Vitreodyne contains:** Crystalline lutein (2%); Inactive biologically compatible vehicle.

**HOW TO USE**

Shake Vigorously for 5 seconds immediately prior to injection.

Aspire up to 1 ml of liquid into the syringe.

Apply slowly and in a circular way directly to the vitreous.

High tropism for vitreous provides a powerful dispersion for **complete vitreous outermost periphery removal.**

Precise visualization and identification of the vitreous.

High density eliminates the need for vigorous dye flushing or fluid-air exchange during vitrectomies.7-8

No biological or pharmacological effect.
## KEMIN PHARMA PORTFOLIO

### PHACODYNE
- **Surgery**: Cataract
- **Lutein**: Soluble
- **Lutein %**: 1%
- **Color**: Dark Green
- **Presentation**: 1ml vial

### RETIDYNE CAP
- **Surgery**: Vitreoretinal
- **Lutein**: Soluble
- **Lutein %**: 1%
- **Color**: Green
- **Presentation**: 0.5ml syringe

### RETIDYNE
- **Surgery**: Vitreoretinal
- **Lutein**: Soluble
- **Lutein %**: 2%
- **Color**: Green
- **Presentation**: 1ml vial

### DOUBLEDYNE
- **Surgery**: Vitreoretinal
- **Lutein**: Soluble
- **Lutein %**: 2%
- **Color**: Greenish Blue
- **Presentation**: 1ml vial

### VITREODYNE
- **Surgery**: Vitreoretinal
- **Lutein**: Crystalline
- **Lutein %**: 1.8%
- **Color**: Orange
- **Presentation**: 1ml vial

### TRIPLEDYNE
- **Surgery**: Vitreoretinal
- **Lutein**: Crystalline
- **Lutein %**: 2%
- **Color**: Dark Greenish Blue
- **Presentation**: 1ml vial

### RETIDYNE PLUS
- **Surgery**: Vitreoretinal
- **Lutein**: Crystalline
- **Lutein %**: 1.8%
- **Color**: Greenish Blue
- **Presentation**: 1ml vial

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**Staining**
- **AC**: X
- **Vitreous**: X
- **ERM**: X
- **ILM**: X

**Color**
- **Soluble Lutein + TB**
- **Soluble Lutein + BB**
- **Soluble Lutein + BB + TB**
- **Crystalline Lutein + BB + TB**
- **Crystalline Lutein + BB**

**Presentation**
- **1ml vial**
- **0.5ml syringe**

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**ALL KEMIN PHARMA PRODUCTS HAVE CE MARK.**

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Lutein possesses an isomer called zeaxanthin, which is also present in the formulation.
REFERENCES


Not all products are available in all areas. Product labeling and associated claims may differ based on regulatory requirements.