



**“LIGHT FROM DEVICE SCREENS” A REAL THREAT TO STUDENTS**  
**RELEVANT INFORMATION FOR SCHOOLS**

**MOST RECENT FINDINGS**

**THE CURRENT REALITY**

**RETICARE® EYE PROTECTION**

**IT'S NECESSARY · FALSE BELIEFS**



**LEADER IN EYE PROTECTION FROM HIGH ENERGY LIGHT FROM DEVICE SCREENS**

# The most recent findings

The Complutense University of Madrid, a leader in research on the risks and the prevention of High Energy Light.

The research team of the Complutense University of Madrid (UCM), led by Dr. Celia Sánchez-Ramos, has been studying the effects of High Energy Light on eye health for more than 15 years.

**Endorsed by the Complutense University of Madrid, Reticare® has been developing the best solutions to protect your eye health since 2013.**

In the beginning, the focus had been on extending the life expectancy of the retinas of senior patients.

However, **it all changed in 2012 as a result of in vitro experiments that showed the risk is much greater than projected. It was discovered that the newer LED light sources can affect not only the seniors but the entire population**, especially affecting children and young adults more so than others.

These results **demonstrate that protection is essential for all users** of the new screens. Macular degeneration is the biggest cause of irreversible blindness in the developed world.

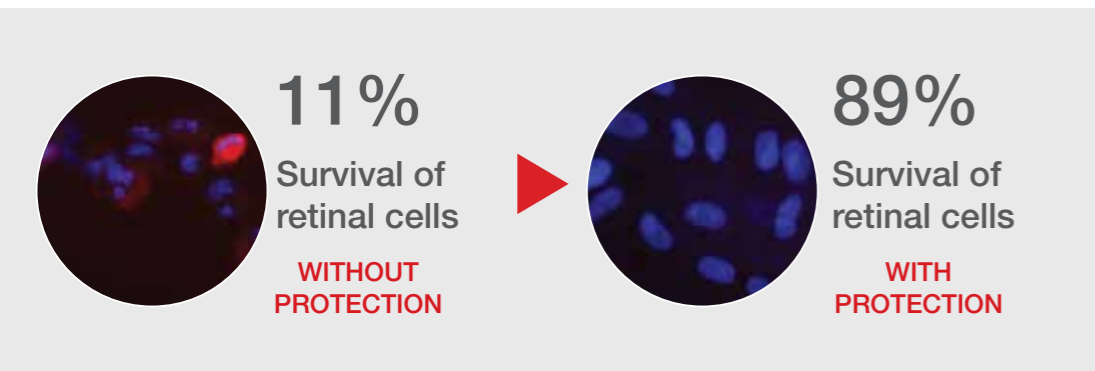


# 2012 in vitro experiments

First test of risks from LED light on human cells

In vitro experiments by the UCM research team found that, by blocking High Energy Light, the survival of retinal cells increase by 89%.

(1) Human retinal pigment epithelial cells exposed to LED light (white 5400 ° K and monochrome 468nm, 525nm, 618nm) at 7cm distance in 3 light-dark cycles (12h / 12h) with and without protection.



Type of exposure  
*in vitro*

Type of lighting  
LED lighting

Cell Type  
Human retinal pigment epithelial cells

Exposure time  
3 light-dark cycles (12h / 12h)

Type of exposition  
*in vivo*

Light source  
LED lighting emitted by marketed tablet screens

Experimental animals  
pigmented rats

Exposition time  
3 months (16h light / 8h darkness)

## Important discoveries

# 2015-2017 in vivo experiments

Reticare® reduces retinal cell damage in laboratory animals exposed to light emitted by tablets

First test of the effects of light from tablet screens on laboratory animals

On January 17, 2017 at the Medical College of Madrid and on January 23, 2017 at RCC-Harvard, the UCM research team presented the results of the latest research on experimental animals.

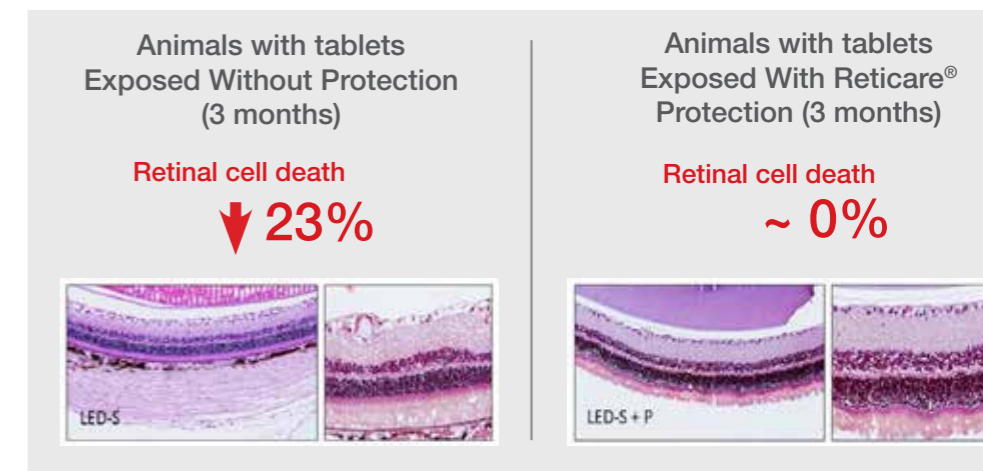
Structural and gene expression studies were performed on the retina of laboratory animals split in two groups. The first group was exposed to the light emitted by screens of currently marketed tablets. The second group consisted of the same type of animals, with the same intensity of light, exposed to the same type of tablets with Reticare® intensive protection installed on the screens (the only protector scientifically proven to reduce the risks of High Energy Light).

Studies on these animals (whose life expectancy is between 7 and 10 years) show that **after three months of exposure to the light emitted by screens, the group exposed to unprotected tablets suffered a 23% reduction of retinal cells**. On the other hand, the animals exposed to tablets with Reticare® protection suffered **virtually no damage**.

**These results force us to act immediately. The outcome of the studies reaffirm the important preventive effects of Reticare®, devised and developed by the UCM, that can be used to reduce the damages caused by High Energy Light emitted by LED screens from digital devices.**

The impact of this study on animals suggests the possibility of a massive risk of permanent damage to the human retina, the main cause of irreversible central blindness.

*These shocking results prove, once again, the existence of a possible risk of irreversible damage to digital screen users. The results also demonstrate the protective effects of Reticare®*



(1) Chamorro E, Carralero SF, Bonnin-Arias C, Pérez-Carrasco MJ, Muñoz de Luna JM, Vázquez Ing D, Sánchez-Ramos C. Photoprotective Effects of Blue Light Absorbing Filter against LED Light Exposure on Human Retinal Pigment Epithelial Cells In vitro. J Carcinog Mutagen 2013; S6: 008. doi:10.4172/2157-2518.S6-008.

\*Results of investigations on experimental animals, presented by the research team of the Complutense University of Madrid at the College of Physicians of Madrid (Spain) and Harvard University (USA) in January 2017.



# 2017 animal retinal damage model experiment

A new research led by **Taipei Medical University (Taiwan)** and published in the journal Toxicological Sciences corroborates the connection between High-Energy Light (“blue light”) and macular degeneration. The study concludes that this type of radiation **can cause damage to the retina as a result of dependence on Smartphones.**

The experiment specifically tested the effects of blue light on the rat retinal damage model, developed with or without continuous or periodic **exposure for 28 days.** In this model, periodic blue light exposure caused fundus damage, decreased total retinal thickness, caused atrophy of photoreceptors, and injured neuron transduction in the retina.

The results, detected with a shorter exposure time than in UCM’s studies, show that the **risks from device screens** are even greater than previously thought.

*Periodic blue light exposure caused retina damage*

## The Current Reality

*The new paradigm of digitalization*



The use of technology is becoming more common in schools as it becomes a much more interesting and an effective way of learning for students. Whether it’s a tablet or a desktop computer, it is evident that your students can work with ease, with all of these devices.

**Therefore, the reality is screens are present on a daily basis in the life of the students. How can we prevent the harmful effects to their eye health?**

**Students now have access to technology at a younger age.** The new LED screens they use at home and at school **can emit 5 times more High Energy Light** than previous ones. In addition, the distance to the screen is shorter because children have smaller

arms and they focus more closely as screens are touch-sensitive. This early use, without adequate protection from light emitted by screens, **can pose a serious risk to the eyes of the students.** They also lack the natural protection that the eye develops with age, and **a child’s retina receives around 40% more High-Energy Light.**

It’s essential for students to enjoy technology in class and learn more, but they should always be protected to prevent their eyes from suffering serious consequences in the short, medium and long-term.

Today, the lack of protection in using screens is a reality. Ultimately, students may be exposed to irreversible risk factors for the retina and also may suffer from other common symptoms, such as itchy and red eyes, headaches, blurry vision, etc., related to screen use, which could affect their vision and their performance at school.

*40,000 students are already protected from the risks of harmful light emitted from device screens*

# Reticare® eye protection

*The only scientifically proven eye protector for device screens*

Reticare® is the only scientifically proven eye protector from the damage caused by light emitted from digital screens. **Its protective effects have been proven by in vivo and in vitro experiments.** Reticare® has become a reference of protection from High Energy Light in the industry.

Reticare® is the best solution for device users at school because it is **backed by 15 years of scientific research, with more than 100 researchers,** from different specialties in science involved. It’s based on the natural protection the eye develops to defend itself from light and it’s **specially designed according to children’s needs,** as their crystalline lens does not fully develop until age 25.

The conditions of screens that students use may adversely affect their performance at school. An unprotected display causes more eye fatigue and symptoms such as headaches, itchy eyes and blurred vision due to High

Energy Light emissions. In addition to using Reticare®, it’s advisable to control the number of hours students are exposed to screens.

Our goal is to respond to the need of **making a real change and adapting classrooms to the digital era.** We, at Reticare®, believe protection is needed to enjoy the benefits of technology without endangering health.

**Hundreds of schools already use our protection in the classroom. Prestigious academic institutions such as The West Point Academy and RCC Harvard also use Reticare® on their screens.**



In an environment where the sustainable use of technology is seen more and more as a symbol of innovation and modernism, **Reticare® protection is the essential health solution to face the risks of the digital era.**

We recommend the use of Reticare® on the screens of all the devices at your school, so that students and teachers can protect their eyes and improve their visual comfort.

Reticare® is like investing in insurance for the health of students.

**It’s based on the natural protection the eye develops to defend itself from light and it’s specially designed according to children’s needs**



# It is essential to reduce the risks of their unprotected eyes

## AN ETHICAL DECISION

We should reflect on what kind of an example we provide students when we don't act against a risk that can affect their health.

The results of the researches regarding the harmful effects of High Energy Light clearly indicate they should be enough to take the appropriate prudential measures.

## REPUTATIONAL RISKS

One of the most important values today is the reputation of the institutions, carved with the effort of years, in order to offer quality education.

The reputation of the center may be affected by a wrong decision in respect to new technology.

## LEGAL RISKS

Protecting the eyes of your students with Reticare® also means anticipating possible legal risks.

What would happen if there was a case of retina damage that could be associated with the use of device screens at your school? The fact that there is no legislation yet doesn't mean there are no legal risks being assumed, in the hypothetical case of parents deciding to take actions.

## IMPAIRMENT OF SCHOOL PERFORMANCE

Nor should we forget the risks associated with eye fatigue and sleep disorders. These effects, caused by overexposure to High Energy Light emitted by screens, could cause negative consequences on the students' proficiency.

Latest findings warn that sleep deprivation in children is directly related to the use of unprotected device screens.

## RISKS OF TAKING THE WRONG MEASURES

Another major risk consists in the use of technologies are those that are not scientifically supported to protect students, such as software applications with no study, evidence or other proven methods.

By taking these types of unsupported measures, the existence of an irreversible risk to the health of your students and the increased risks to their eye health, can be faultily disregarded that can cause more problems in the future.



# Bad practices and false beliefs about High Energy Light

## "I heard the risks are not proven"

The Complutense University of Madrid's pioneering experiments confirm the irreversible damage that light from device screens can cause to the eyes is more serious than previously thought. UCM studies also proved that Reticare® is even more effective than the scientists themselves predicted. Other important institutions warn of the risks of High Energy Light to the retina respectively.

## "By reducing its brightness, my screen doesn't hurt my eyes"

Lowering your screen brightness will reduce the intensity of light but not its composition. It will continue affecting your eyes aggressively, even at a lesser amount of light.

## "I protect my eyes with software apps"

There is no scientific evidence with software applications confirming that it can reduce the risks. There are many mobile apps that could even cause adverse effects and increase the risks.

## "I'm already wearing glasses with filters"

Reticare® Eye Protectors are able to block up to three times more harmful light than most glasses. Children need the highest level of protection.

## "If this was true my children would already be blind..."

New screens, which emit five times more high energy light compared to previous technologies, have been in the market a few years. It's too early to tell its effects on people.

## "... and the institutions would have done something"

Since its inception, Reticare® has been informing governments and institutions of these risks. The regulations require the consensus of all parties involved and usually take a long period of time. The absence of a law doesn't exempt us from the harm of not acting upon the risks.



LEADER IN EYE PROTECTION FROM HIGH ENERGY LIGHT FROM DEVICE SCREENS



“ The ever increasing use of digital screens in the classrooms may conceal huge risks for the students ”

# STOP

## DAMAGING YOUR EYES & HEALTH



FOR A FREE CONSULTATION FOR YOUR SCHOOL CONTACT US

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