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Real Colegio Complutense

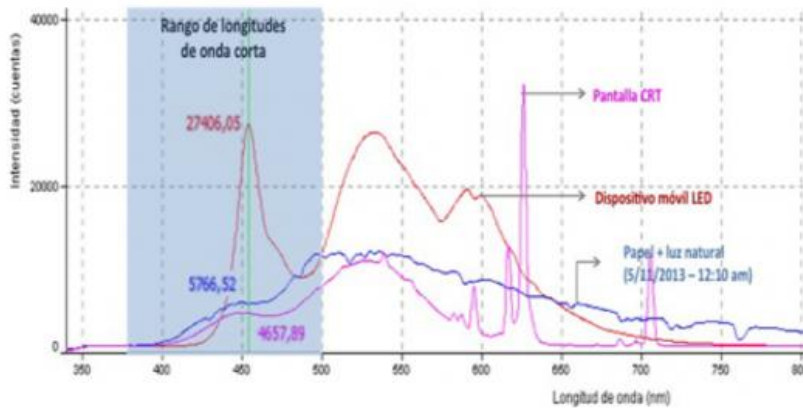
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## Eyecare Research - LED emit phototoxic light

Chair: Dr. [Celia Sánchez-Ramos](#), Professor at the Department of Optometry and Vision, Universidad Complutense de Madrid.

The relation between macular degeneration-retinal damage and exposure to light has been known since the middle of the 20th century. Nevertheless, in the last 5 years, the advent of new technology LED along with its massive use in screens of electronic devices (smartphones, tablets, laptops) has made phototoxicity the main field of our research.

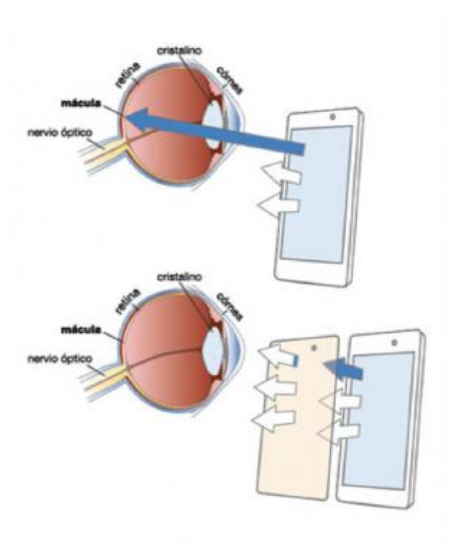
The studies conducted by the Complutense University of Madrid have shown that LED devices emit 5 times more toxic light than light reflected by paper or emitted by the older-style CRT monitors.



In-vitro experiments in which human donated retinal pigmentary epithelium cells were exposed to 36-hour circadian cycles of direct LED light of different intensities have been forceful: without protection, cell death amounted to 93%. However, when a protective element was placed between the cells and LED light, the survival rate of cells increased by 90%.

This discovery is the result of more than 100 researchers from different fields: Optics, Anatomy, Surgery, Experimental Ophthalmology, Embryology, Optometry, Optical Physics, Biology, Statistics and Vision Science, as well as many retina experts and professionals in the field of mobile devices and consumer technology.


These discoveries have led to the creation of a portfolio of patents intended for eyecare prevention. New prevention eyecare products are being developed for new applications.



This technology will become a standard for the industry which will create a more sustainable and responsible mass market for the intensive use of these devices.

The aim of this project is to broaden the spectrum of our discoveries and patents and enhance our findings with collaborations within the Harvard ecosystem. Specifically, in the fields of Computer Vision Syndrome (C.V.S.) and sleep disorders for the Medical arena and for the prevention and Public Health.

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