

The Vision Centre
ARC Centre of Excellence in Vision Science
MEDIA RELEASE

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THE HEALING POWERS OF INFRA-RED

Researchers at The Vision Centre have discovered compelling evidence that infra-red light can reduce the severe damage caused to eyesight by exposure to bright light.

Their world-first finding opens the possibility for one day successfully and painlessly treating some forms of vision loss caused by overexposure to sunlight or artificial light.

“It has been known for some time that infra-red light, at certain wavelengths, can promote healing of various body cells. We decided to carry out a series of experiments to see if it could restore or prevent damage to vision cells that have been exposed to very bright light,” says Dr Krisztina Valter of The Vision Centre (ARC Centre of Excellence in Vision Science) and The Australian National University.

“This is the kind of damage which can happen to anyone when their eyes are exposed to excessive light, especially those who live constantly in very bright environments or whose work exposes them to intense lighting. This can cause significant eye damage.”

The team’s experimental results, carried out in rats, were dramatic – a few minutes exposure to infra-red light at a wavelength of 670 nanometres reduced the amount of eye damage significantly. Furthermore it appeared to reduce damage when treatment was given before, during and even after exposure to light.

“This provides encouraging support for thinking that infra-red light can possibly be used to treat people who have suffered from over-exposure to very bright light – or those whose work and living environment exposes them to excessive light over a lifetime and who are consequently at risk of vision loss due to macular degeneration and other conditions.

“However, we will need to carry out clinical trials to find out if it works as well in humans,” she adds.

The discovery that infra-red light helps the body's healing processes was made by astronauts tending plants grown under infra-red lighting in space, Krisztina says. "In space wounds heal very slowly, but those astronauts tending the plants found their wounds healed much more quickly," she says.

Because the human body consists largely of water, it absorbs most of the spectrum of light. However at wavelengths between 600-1000 nanometres – the near infra-red – certain body cells appear to respond to IR light.

"We believe that what is happening is that the light increases the activity of key enzymes in the body's cells, which make more energy available to the cell. When an eye cell has been damaged by overexposure to light it usually dies from oxygen stress caused by free radicals – but when the cells are stimulated with IR light, they appear to withstand the damage much better."

In a further development, Dr Valter has found that IR treatment also reduces the inflammation that can occur within the eye following overexposure to very bright light.

The infra-red treatment could help prevent damage caused by bright light exposure during eye surgery or examination, where the use of bright light cannot be avoided," Dr Valter says.

"More interestingly, it seems to help the healing of the retina and prevent long-term damage after accidental exposure to excessive light, welding arcs, looking into the Sun, or laser light injury.

"Our work suggests that, for all of these people, infra-red treatment could be a possibility in the future."

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