

MACUWELL™

Seeing better naturally

How we can  
protect our eyes  
in the digital age

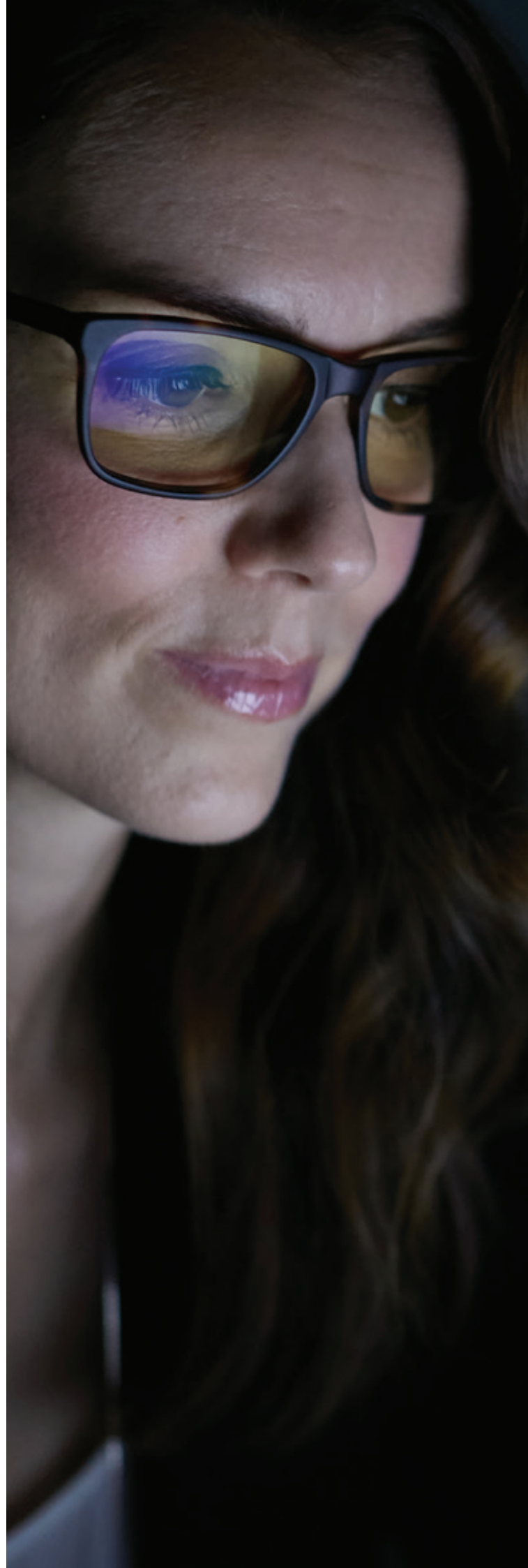


# Properly protecting our eyes

All around the world more and more people are suffering from visual impairment. Sight loss, whether full or partial, can have many consequences; some are congenital while others only develop with age. People with neurological or developmental disorders are particularly at risk of developing a visual impairment. In addition, diabetes and certain hereditary diseases are associated with increased risk. Even so-called lifestyle factors, such as smoking or an unhealthy diet, can contribute to sight loss in later life. There are ways to help those affected – with corrective glasses, for example, or surgical procedures. Nevertheless, visual impairments can strongly impact your quality of life. It's not surprising then that vision protection is one of the most important health issues for people around the world.

What's important to know is that more than 80 percent of visual impairments can either be cured or prevented well in advance by taking preventative measures.<sup>1</sup> If we paid more attention to our eyes and our health, we could detect problems at an early stage and take the necessary steps to stop possible diseases in their tracks. By doing so there would be considerably fewer people with no choice but to live with visual impairment.

Regular eye tests with your MACUWELL™ specialist can help you protect your eyes and find out what concrete actions you can take based on your individual results. These may include taking supplements or wearing blue-light-filtering glasses – simple measures available to everyone nowadays. By taking these steps you will protect your eyes against damage and maintain your good vision – for the rest of your life.





Steffen Geipel & Gerold Bäcker –  
Founders of Macuwell™

# How we can protect and keep our eyes healthy in the digital age

MACUWELL™ is a holistic concept designed to protect your eye health. Together with a network of independent opticians throughout Germany, we have set ourselves the aim of providing you with comprehensive advice and support on how to maintain your vision. We place special emphasis on prevention, through the regular measurement of macular pigment density, individualised blue light protection and targeted supplementation. Because we want to offer you all-round protection for your eyes, even in the modern digital era.

## Educates

Allow enough time for your check-up. Your optician can assist you and show you what you can do for your eye health:

- Measuring your macular pigment density
- Sufficient intake of important nutrients
- Reduce to a minimum the strain caused by blue light and other factors which are harmful for the eyes



## Measures

Your optician can measure the amount of macular pigment in your eyes using an MPS II device. Normally macular pigment contains a high concentration of lutein. The name lutein comes from the Latin luteus meaning “yellow” and describes the color of this carotenoid, which is capable of filtering out energy-rich blue light. The amount of lutein in the macula – also referred to as the yellow spot – can vary in quantity. You can find out the lutein content of your macula by simply paying a visit to your optician.



## Benefits of the concept for consumers

## Rebuilds

Lutein cannot be produced by our bodies. Instead we must absorb it through our diet. Natural sources include dark-colored vegetables such as kale or spinach. Supplements, too, are a way for you to absorb micronutrients. Vitamin C, E, and copper provide antioxidative protection, while zinc and the omega-3 fatty acid DHA have a positive effect on your eye health.



## Protects

Filter glasses offer a very high degree of protection against blue light rays without restricting your vision. They can also improve your sleep quality.





# The eye

Our eyes are exposed to many different irritants every day, including sunlight and artificial light, whether at home or at work. They help us to perceive and to process these stimuli, and are therefore our window to the world.

From our diet to our workplace – our way of living can have a detrimental impact on the health of our eyes in later life. Now and not later, we must ask ourselves how we can best protect our eyes to prevent damage and maintain healthy vision.

## The digital dilemma

Light, particularly natural sunlight, is vital for many processes in nature and in the human body. For example, it supports the synthesis of vitamin D, which in turn plays an essential role in bone formation and our overall wellbeing.

Research suggests, however, that certain light sources have a negative effect on our eyes. Longer periods of exposure to blue light, for example, can cause lasting damage to our eyes. This blue light is transmitted by digital devices such as computers, mobile phones and tablets, but it also forms part of the natural light emitted by the sun.

Nowadays, technology plays an important role in the everyday lives of millions of people across the globe. This means that we are being exposed to more blue light than our parents and grandparents. In the long term this places us at greater risk of developing vision problems, including:

- Age-related macular degeneration (AMD), a leading cause of blindness and visual impairment <sup>2</sup>
- Eye straining and computer vision syndrome (CVS) <sup>3</sup>
- Sleeping difficulties <sup>4</sup>



# Our vision: the basics



The human eye is made up of many parts, which all play different yet equally important roles. The retina is a layer of tissue in the posterior part of the eye which contains light-sensitive cells that enable us to perceive and process light. The macula forms the center of the retina, so to speak; the latter in turn is responsible for protecting the light-sensitive cells and giving us sharp, detailed vision.


The macula is protected by a layer of pigment known as the macular pigment. It helps to filter out blue light before it hits the retina and is able to cause it permanent damage. For people with a low pigment density, more blue light gets through to the retina. As a result, they are particularly susceptible to blue light damaging the light-sensitive cells. In the long term this can increase the risk of getting AMD.

## Eye tests

In order to ensure that your eyes remain as healthy as possible throughout your life, you should get them regularly tested. Your optician can measure the optical

density of the macular pigment (MPOD) in the eye using an MPS II device – quickly, accurately and pain-free. This is the only way that some diseases, including AMD, can be detected at an early stage, because they generally don't present any noticeable symptoms.

The MPS II device is clinically tested and is used by most specialist opticians. The device measures the amount of macular pigment in the eye – the greater the amount, the larger the pigment density.<sup>5</sup> Unless there are clear indications or risk factors, these tests are recommended for people over the age of 40. From the age of 65, the eyes should be tested every one to two years.



### Lutein measurement. Do you know your value?

Macular pigment density	MPOD	MPOD category	Risk	Risk indicator
< 0.2	< 0.2	Low	High	☹️
0.2–0.5	0.2–0.5	Medium	Medium	😐
> 0.5	> 0.5	High	Low	😊



# What can we do to protect our eyes?

## Supplements

Most people know that certain lifestyle factors such as smoking can have an adverse effect on our eye health. Very few people know that our diets can have just as much of an influence. Opt for unhealthy, calorie-laden foods and your body will not get the amount of nutrients that it needs to protect itself. This increases your risk of having eye problems or developing an eye disease later on in life.

Lutein is a nutrient that is particularly important for our eye health. This natural pigment is synthesized by plants such as leafy greens and is an essential part of the macular pigment in the eye. In the macular pigment, lutein is essentially responsible for filtering out blue light before it can damage the retina. It is also involved in creating new macular pigment.

Consume too little lutein and the macula cannot create enough macular pigment, meaning our eyes are poorly protected against the harmful effect of blue light. Studies suggest that increased consumption of lutein, whether through the diet or in the form of supplements, can increase macular pigment density and therefore reduce the amount of blue light that hits the retina.

Often we are unable to meet the recommended level of lutein through diet alone. Supplements can be an efficient and cost-effective way to achieve sufficient lutein intake and therefore keep the macula healthy. Lutein is a key ingredient in MACUWELL™ supplements. They are scientifically proven and can be easily combined with your daily diet.

## Blue-light-filtering glasses

If your eyes need additional support, your optician can recommend special blue-light-filtering glasses. Their lenses offer you up to a hundred percent protection against the damage caused by blue light, without restricting your vision. They can also help you improve your sleep quality.<sup>6</sup>

The research suggests that blue-light-filtering glasses reduce your sensitivity to glare and shorten the recovery period following heavy strain caused by bright light. These lenses may also protect against oxidative damage caused by blue light rays or at least reduce it, thereby minimizing the risk of AMD.<sup>7</sup> Ask your optician for advice about the most suitable blue-light-filtering glasses for you.





## Keeping an eye on your eye health

The human eye is a highly complex organ and our window to the world. Various factors including blue light can cause irreversible damage to the eye. It is particularly important, therefore, that we protect it at every stage of life.

Consuming a healthy diet and minimizing the burden caused by blue light can reduce the risk of visual impairment – but unfortunately in our modern world this is not always easy to achieve. Regular tests with your optician show that you can benefit from taking additional steps, such as taking supplements or wearing blue-light-filtering glasses.

### MACUWELL™

Macuwell is a holistic concept designed to protect your eye health. Together with a network of independent opticians throughout Germany, we have set ourselves the aim of providing you with comprehensive advice and support on how to maintain your vision. We place special emphasis on prevention, through the regular measurement of macular pigment density, individualized blue light protection and targeted supplementation. Because we want to offer you all-round protection for your eyes, even in the modern digital era.



Contact:  
Macuwell Deutschland GmbH  
Hauptstrasse 54  
63619 Bad Orb  
Deutschland  
Info@macuwell.de

[www.macuwell.de](http://www.macuwell.de)

#### References

- 1) WHO, Blindness and visual impairment, [website], <http://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment> (accessed 23 August 2018).
- 2) J. Dillon et al., 'Transmission of light to the aging human retina: possible implications for age related macular degeneration', *Exp Eye Res*, vol. 79, no. 6, 2004, p. 753–759.
- 3) American Optometric Association, Computer Vision Syndrome, [website], 2018 <https://www.aoa.org/patients-and-public/caring-for-your-vision/protecting-your-vision/computer-vision-syndrome?ss=y> (accessed 14 August 2018).
- 4) G. Tosini, 'Effects of blue light on the circadian system and eye physiology', *Molecular Vision*, vol. 22, no. 1, 2016, p. 61–72.
- 5) P. Davey et al., 'Macular pigment optical density: repeatability, intereye correlation and effect of ocular dominance', *Clinical Ophthalmology*, vol. 10, 2016, p.1671–1768.
- 6) S. van der Lely et al., 'Blue blocker glasses as a countermeasure for alerting effects of evening light-emitting diode screen exposure in male teenagers', *Journal of Adolescent Health*, vol. 56, no. 1, 2015, p. 113–119.
- 7) E. Chew et al., 'The age-related disease study 2 (AREDS2): study design and baseline characteristics (AREDS2 report number 1', *Ophthalmology*, vol. 119, no. 11, 2012, p. 2282–2289.

Macuwell has taken care to ensure the accuracy and topicality of the information contained within this document. However, Macuwell accepts no express or implied assurance or guarantee for the correctness, reliability or completeness of this information. In no event shall Macuwell be held liable for damages resulting from the reliance on or use of the information contained within this document.

Macuwell™ is a registered trademark of DSM.

© Macuwell™

