



# Blue light/ 3 IN 1 Face Oil

## 1. What are the three properties of 3 IN 1 Face Oil?

The oil combines anti-aging, anti-oxidant and anti-blue light properties.

## 2. What is blue light?

Blue light refers to short high-energy wavelengths and visible light which is more dispersed in the atmosphere than other wavelengths within the spectrum of visible light. Sunlight contains this kind of light. Blue light is also in numerous artificial sources of light such as TVs, PCs, tablets, laptops, monitors, and mobile phones.

## 3. Why do some people call it “HEV light?”

HEV is simply another name for blue light. It stands for high energy visible light and refers to light in the blue-violet band of the spectrum.

## 4. Where is blue light located on the light spectrum?

Blue light has a wavelength of between 400 and 500 nanometers. By way of comparison, infrared light has over 700 nanometers, whereas UVA and UVB rays less than 400 nm.

## 5. What is a light spectrum?

Light consists of different wavelengths: the shorter the wavelength, the higher the energy it emits. Light is reflected at and into our eyes can be divided into visible light - between wavelengths of 380 and 780 nm - and invisible light, located on the ultra-violet (UV light) and infrared (IR light) ends of the spectrum.

## 6. Is there any natural protection against blue light?

Our eyes have two natural filters that protect against short-wave blue light: the lens and the macular pigment. Vitamin C contained in the lens, and pigments such as lutein and zeaxanthin, protect us from free radicals that can build up as a result of rays emitting short wavelengths. In our macula lutea (“yellow spot”), the area which gives the sharpest vision, lutein and zeaxanthin play prominent roles. The macula pigment is responsible for absorbing short wavelengths of light to prevent free radicals from forming in the retina. Free radicals can lead to oxidative stress and damage the photoreceptors in the retina. The converse also holds true, as a significant reduction in zeaxanthin and lutein has been identified in cases of macula degeneration.

## 7. Why has blue light become more dangerous?

Our lifestyles have changed. The use of mobile phones and computers has increased dramatically. We are exposed to more blue light as a result. Clear lenses with blue-light filters and screen-protection films have already been specifically developed to protect our eyes from the increased strain caused by blue light.

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## **8. How does blue light affect our skin?**

Just like UV rays, blue light generates free radicals on the skin, leading to premature ageing, an uneven skin tone and age spots. Blue light penetrates through the epidermis and the dermis, causing damage. We call this photoaging or light aging.

## **9. Why is blue light used to treat acne?**

In such cases, the aim is to initiate a photochemical reaction. The free radicals generated by blue light cause damage to membranes, thus selectively destroying the bacteria responsible for acne.

## **10. How exactly does the blue light barrier work?**

Lutein, an ingredient that filters out blue light, is derived from marigolds. Lutein is a type of carotenoid. The chemical structure of lutein enables it to neutralize the harmful rays found in blue light. In-vitro tests demonstrate that lutein is highly effective in absorbing the blue, potentially harmful rays of visible light, reducing damage to keratinocytes and fibroblasts and ensuring the survival of skin cells. Products containing lutein also increase skin elasticity, hydrate the skin and strengthen its natural barrier.

## **11. Has the property protection against blue light been scientifically confirmed?**

In addition to the in-vitro tests mentioned above, tests have also been carried out by independent scientific institutes. They confirm the absorbent, anti-oxidative properties of 3 IN 1 Face Oil compared to products that do not contain the ingredient lutein.

## **12. Do all carotenoids protect against blue light?**

Carotenoids are plant precursors to vitamin A. All carotenoids are highly anti-oxidative and can absorb blue light to some degree. However, absorption does not automatically result in 100% protection, as each carotenoid exhibits different properties. Zeaxanthin and lutein have similar chemical structures. They are the only carotenoids found in the eye's macula, functioning as blue light filters and anti-oxidants there.

## **13. Why doesn't a product that protects against free radicals also protect against blue light?**

It works similarly to sun protection. On the one hand, sunscreens contain a filter to reflect or absorb UVA and UVB rays and on the other hand, anti-oxidants to reduce the harmful effects of oxidation and DNA damage.

## **14. Should 3 IN 1 Face Oil be considered a sun lotion and must it be applied regularly throughout the day?**

No, the maximum length of protection for sun lotion is calculated by multiplying your skin's own self-protection abilities by the SPF. Protection can be renewed through the application of sunscreen but it cannot be extended. Sunscreen also regularly loses its ability to protect due to water or being rubbed off, which is why it needs to be reapplied.

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## **15. What is the best way to apply 3 IN 1 Face Oil?**

3 IN 1 Face Oil is part of our SPECIAL CARE range. These extra-care products are specifically formulated to replace or supplement your day or night skin care routine, depending on your skin type. We recommend applying the face oil alongside or as a replacement to your daily skin care routine, as your skin is mainly exposed to HEV/blue light during the day. However, it can be worth protecting your skin in the evenings when you are using an e-reader, for example.

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