

## UV LEDs Keep Things Fresh and Have an Antibacterial Effect

### Goodbye Mold!

Everyone has had experience with mold at one time or another: for example, you have probably gone food shopping, brought your vegetables home, put them into the refrigerator, and brought them back out again a few days later to use for cooking just to find – mold! How was that disgusting fungus able to spread when the refrigerator is designed to keep food fresh? The answer is simple: Molds thrive even at temperatures below freezing. The refrigerator – where the temperature is cooled to between 2 °C and 8 °C – does not provide a threat to molds. If mold starts to form on food, the only place for it is the garbage, especially because their toxins are some of the most hazardous substances in the world.

Traditional methods, such as salting, reduce mold formation but also change the taste of food. Some food manufacturers use strong chemical substances; however, many consumers do not want their food to contain fungicides or conservatives. This is one case in which UV lighting could help. Tests have shown that mold spreads under exposure to UV lighting in the wavelength range from 220 nm to 340 nm much more slowly. In addition, the exposure also destroys some of the dangerous toxins.<sup>1</sup> Then there is the well-known antibacterial effect: Even much-feared salmonella bacteria cannot withstand ultraviolet waves.

Many refrigerator manufacturers now offer models with UV lighting; however, you also have to be careful with certain beverages: for example, some components in beer, wine, and milk change under the influence of UV light. This results in the notorious “light taste” that makes these beverages unenjoyable. Those with a UV refrigerator should store these beverages in a way that protects them from the light. The standard brown and green bottles that wine and beer are stored in are sufficient to block UV lighting.

The visible spectrum will soon provide short-wave beams with competition. Research scientists have discovered that blue light achieves a similar effect.

<sup>1</sup> <https://www.heise-gruppe.de/presse/Technology-Review-ueber-UV-LEDs-im-Kuehlschrank-1897555.html>



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## UV LIGHT Everywhere

### Fruit and Vegetable Cultivation

Research scientists in the U.S.A. are testing the effects of LEDs and UV radiation on the growth of fruits and vegetables. The results: UV radiation leads to less pests, red LEDs lead to more blossoms and fruits, white LEDs lead to faster growth, and blue LEDs lead to higher yields. While NASA is currently testing this method in terms of its suitability in space, hydroponic plant kits with LED light are popular among home growers.

### ... and Chickens

Birds perceive the world differently than people. They not only have receptors for blue, green, and red light, but they also partially perceive the ultraviolet spectrum. The artificial light on poultry farms is commonly designed to be pleasant for chicken farmers. Scientists are currently testing what effect lighting with a larger percentage of UV radiation has on the well-being and "productivity" of laying hens.

### Even Healthier

UVB radiation aids, among other things, the production of vitamin D. This prohormone plays an important role in bone development and the regulation of calcium levels in the blood. A deficiency can also lead to severe heart disease. Mushrooms that have been exposed to UVB radiation contain more vitamin D.

### Oral Hygiene

UV radiation is also used in the bathroom for disinfecting; for example, there are now a whole range of devices available for disinfecting toothbrushes. Prices start at approx. 20 euros.

### Sterile Baby Bottles

State-of-the-art technology is never a bad thing when it comes to the well-being of children. One U.S. company is currently developing a portable UV device to be used for sterilizing baby bottles. They are using the same technology that hospitals already use for disinfecting.

### Pain Relief

Medical science can also profit from UV technology. UVB radiation facilitates the production of cannabidiol and THC in hemp plants.<sup>6</sup> These substances have an anti-spasmodic, anti-inflammatory, and anti-nausea effect.

## UVB LEDs with power levels of up to 300 mW

### Powerful LEDs make the invisible visible

UV radiation excites fluorescence, forming the basis for many analysis methods in fluorescence microscopy.

UV LEDs are replacing mercury vapor lamps as radiation sources more and more. With continually increasing power levels, UV LEDs are becoming attractive for more and more application fields.

With the UVB wavelength of 305 nm, LG Innotek now offers LEDs with a power level of 110 mW from a single emitter. In addition to the 6060 series, the 6868 series is now also available. The 6868 series has four diodes integrated into one housing.

Together they offer power levels of 300 mW and more. In addition to standard LEDs at 305 nm, other UVB wavelengths are also possible.

The advantages of this technology are obvious: LEDs are small and long-lasting, do not require long warm-up phases, function without complex electrical ballast, and do not have to be integrated into an explosion-proof housing.

