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THE IMPACT OF THE SOLAR ULTRAVIOLET RADIATION ON THE HUMAN BODY

Summary

Solar radiation is necessary for the proper functioning of the human body, has a positive effect on human mood, stimulates the secretion of several hormones, enables synthesis of vitamin D₃. A small part, approx. 8%, of the solar radiation is emitted as ultraviolet (UV) having three different ranges of biological activity: UV-A, UV-B and UV-C. The last one, which destroys living cells, is fully absorbed by oxygen and ozone in the atmosphere. UV-B is partially absorbed by the stratospheric ozone layer and exerts positive effect on the human body by inducing synthesis of vitamin D₃ in human skin. Prolonged exposure exceeding the so-called erythemal dose causes sunburn known as erythema, which may cause subsequently skin cancer. UV-A radiation penetrates through the skin deeper, causing a short-lasting tan, but also accelerates its aging by damaging collagen and elastine, drying the skin, increasing the formation of wrinkles. When sunbathing, it is worth checking the forecast of UV index, which is an internationally accepted measure of the intensity of radiation causing erythema in the range between 297 and 400 nm, having values between 0 and 16 proportional the spectral efficiency. In Poland, it can reach in the summer a value of 10, but even at the value of 3 it is necessary to use precautions such as hats, sunscreens containing UV-B filters, protective eyewear. UV affects not only the skin, but also eyes. Prolonged exposure of the eye lens to intense radiation of 300–320 nm wavelength may cause cataract. Not only can UV-B frequently cause conjunctivitis, it may also result in damage to the cornea, the lens and even the retina.