

Yellow Glasses To Save Vision

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Blue light destroys certain structural elements in the [eye](#), as was revealed by the Russian research team. The mechanism of this effect was studied, and protective measures were offered. Frankly, the results arising from the long-term study conducted by the team headed by Academician Michael Ostrovsky are rather upsetting. Blue colour of the sky, sea, blue shadows on the snow, radiant blue of thaw water puddles in spring - all that turns out to be bad for our eyes. Probably, dazzling glow of blue diamonds and sapphires is harmful too, though this influence is not very widespread.

In essence, the scientists have revealed the following. Firstly, they observed the effects of main spectral components of white light on eye structures at the cellular and molecular levels. Then, it was revealed that the light is not only an information source, but also quite a powerful destructive agent.

Some cells of the retina and pigmented epithelium generate free radicals upon irradiation by certain rays of the spectrum. Those structures of the eye are absolutely indispensable for normal vision, but they degrade with aging. Free radicals are highly aggressive and chemically attack healthy cells of the eye often causing irreversible changes to them. A combined effect of free radicals and oxygen is even more harmful: essential eye cells either undergo oxidation, or become glued together by chemical bonds, or get immobilized, or get damaged in some other way.

One may suppose that some natural mechanism for protection from such kinds of light-induced damages should exist, since the eye developed in

course of evolution under relatively stable conditions of lightening. The research has proved that, actually, there are three protective mechanisms.

Primarily, this is the lens. It normally is somewhat yellowish, hence extinguishing the most part of ultraviolet and shortest waves of the visible spectrum. Secondly, directly behind the pupil is a small yellow-coloured spot on the retina that is the area of greatest visual perception and also another natural colour filter. And, finally, the third protective structure is the pigmented epithelium.

As a result of such a "triple extinguishing", the major portion of blue light that is most harmful for the retina is filtered. With aging, the natural protective mechanisms weaken and fail to perform properly. In case of a disease of the retina, irreversible damages caused by blue light are especially dangerous. In such a situation, the scientists propose certain aid for the eyes.

Knowing the wave lengths particularly harmful for eyes, the researchers designed special glasses that are analogous to the natural colour-filtering structures of the eye. Such glasses have an amber colour, from light to dark yellow, depending on the intensity of sunlight and the degree of eye damage.

It is curious that such glasses not only protect eyes, but also strengthen the vision. This phenomenon is familiar to professional photographers that often use yellow colour-filters in order to obtain a more precise image.

Project Manager Michael Ostrovsky told our correspondent that his team in co-operation with colleagues from the Upper Volga Company have made two trial series of glasses and performed their technical testing. By the present time, they have completed the design of medicinal colour-

filtering glasses for retina dystrophy patients and colour-contrast glasses to be prescribed in case of significant loss of vision. Clinical tests will be performed in the nearest future. Both inventions are now assessed by experts from the Committee for New Medical Equipment of the Health Ministry of Russian Federation. The inventors are sure that such glasses should be available for all people.

Source: Inormnauka

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