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Blue blocking lenses and their effect on color vision

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Blue blocking lenses are being marketed to protect retinas against hazardous blue light allegedly linked to age related macular degeneration without restricting the wavelengths that may be related to melatonin suppression and sleep quality. Any lenses that transmit some wavelengths more than others have the potential to affect color vision significantly. The purpose of this study was two-fold: Firstly, to determine the reduction in the blue dose hazard for several blue control lenses currently for sale. Secondly, to determine whether color vision perception is affected by the use of blue blocking lenses. Five (5) blue blocking lenses of various brands and 1 clear control lens were evaluated for their spectral transmittance and the blue hazard dose reduction. Color perception was assessed using 3 tests: The Cambridge Color Test, the Color Assessment & Diagnosis test and the Farnsworth-Munsell 100 Hue test. Young adults (18 to 35 years) with normal color vision and normal ocular health undertook the tests through 3 brands of blue blocking lenses and 1 clear lens as a control. The lenses were presented in randomized order to minimize fatigue and learning effects. Blue hazard dose reductions varied across the different brands of blue blocking lens (range 15 to 43%). However, no significant differences in color discrimination on any of the tests were found for any of the lenses used.

Biography

Maitreyee Roy is a Senior Lecturer and a Deputy Director of Optics & Radiometry Laboratory at the School of Optometry and Vision Science, University of New South Wales, Australia. She is responsible for teaching geometric, physical and visual optics in the optometry and vision science degrees. She was awarded her PhD from School of Physics at the University of Sydney. She is an accomplished Optical Physicist with broad experience in government and academic institutions with strong R&D background particularly in optical metrology, 3D optical imaging and nanoparticle metrology. She holds numerous memberships with optical societies nationally and internationally.

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