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Study shines light on night-time alertness

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The circadian system is not the only pathway involved in determining alertness at night. Research described in the open access journal *BMC Neuroscience* showed that red light, which does not stimulate the circadian system, is just as effective at increasing night-time alertness as blue light, which does.

Mariana Figueiro worked with a team of researchers from Rensselaer Polytechnic Institute, New York, supported by the Office of Naval Research (ONR), to study the effects of the different lighting conditions. She said, "It is now well accepted that the circadian system is maximally sensitive to short-wavelength (blue) light and is quite insensitive to long-wavelength (red) light. We've shown that a moderate level of red light impacts alertness, an effect that must occur via a pathway other than the circadian system".

Circadian rhythms are roughly 24-hour cycles in various biological processes, such as core body temperature, melatonin synthesis and sleep-wake behavior, that repeat approximately every 24 hours and are synchronized most strongly by the light-dark cycle in the environment. Bright light is known to increase alertness at night, but it has never been completely clear whether this light-induced alertness can arise from neural pathways other than those involved in the circadian system. According to Figueiro, "There is previous compelling evidence that light-induced stimulation of the circadian system increases alertness at night, but our results suggest that this effect is mediated not only by the circadian system, but also through other mechanisms".

More information: Preliminary evidence that both blue and red light can induce alertness at night; Mariana G Figueiro, Andrew Bierman, Barbara Plitnick and Mark S Rea; *BMC* Neuroscience (in press); www.biomedcentral.com/bmcneurosci/

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