Age-dependent alterations in human PER2 levels after early morning blue light exposure

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In our modern society, we are exposed to different artificial light sources that could potentially lead to disturbances of circadian rhythms and, hence, represent a risk for health and welfare. Investigating the acute impact of light on clock-gene expression may thus help us to better understand the mechanisms underlying disorders rooted in the circadian system. Here, we show an overall significant reduction in PER2 expression in oral mucosa with aging in the morning, noon, and afternoon. In the afternoon, 10 h after exposure to early morning blue light, PER2 was significantly elevated in the young compared to green light exposure and to older participants. Our findings demonstrate that human buccal samples are a valuable tool for studying clock-gene rhythms and the response of PER2 to light. Additionally, our results indicate that the influence of light on clock-gene expression in humans is altered with age.
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