Wavelength-dependent phototactic behavior in the brown-winged green bug, *Plautia stali*.

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As in other insects, the brown-winged green bug, *Plautia stali* shows phototactic behavior, whose mechanism and biological function are not necessarily clear however. Here we investigated the effect of light intensity and wavelength on the phototactic behavior under various light conditions. We first analyzed the effect of intensity on phototaxis using white light: the bugs showed negative phototaxis to the light stronger than 1000 x 10^{15} photons/m^2/s and positive phototaxis to weaker light. We next tested the effect of wavelength (365–660 nm), and found that the bugs were strongly attracted to the light of 365 nm and 525 nm. The proportion of attracted bugs paralleled with the ERG-determined spectral sensitivity of the compound eyes peaking at 365 nm and 520 nm: *P. stali* is attracted to their visible light wavelengths, suggesting that the bugs are attracted to lights that look brighter in the tested intensity range. We further performed a two-wavelength selection test. In all tested combinations, *P. stali* was attracted to shorter wavelengths irrespective of the eye sensitivities at the presented wavelengths. The physiological mechanism underlying this selectivity is still unknown.