Physiological responses of a hyper-phototropic mutant to various light stimuli
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Phototropic responses are the directional curvature of organs in response to differences in light intensity and/or quality. The experimental plant is the hyper-phototropic hypocotyl (hph) mutant that is associated specifically with phototropism and is hyper-responsive to blue light stimulation. In wild-type seedlings the response is dependent upon the fluence of blue light (number of incident of photons) used to stimulate seedlings. In this analysis, hph seedlings were exposed to several fluence rates of blue light. Results from these experiments suggest that the hph phenotypes are specific to lower fluence rates. Additionally, red light which has been shown to enhance the phototropic response to blue light was used as a pretreatment to assess whether hph is altered in its response to red light as well as blue. Results from this latter analysis show that hph mutant seedlings still exhibit a higher degree of curvature than control samples, suggesting the red light enhances the phototropic response of hph as well. Together these experiments suggest hph affects a repressor of phototropin 1-dependent phototropism in low blue light conditions.