The rapid effects of Estradiol on the retinal sensitivity of male *Carassius auratus*

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When testosterone levels are elevated during the breeding season, male goldfish will selectively move towards a female goldfish. Outside of the breeding season, male goldfish injected with testosterone will move towards a female goldfish within thirty minutes of the injection. An injection of the aromatized form of testosterone, Estradiol (E\(_2\)), evokes the same sexual approach behavior in the male goldfish. This rapid behavioral modulation implies that testosterone and E\(_2\) may be altering some degree of sexual motivation or the process of collection and integration of visual stimuli in male goldfish, specifically by rapid modulation of the retina. Dark-adapted male animals intramuscularly injected with E\(_2\) were exposed to full spectrum and ultraviolet light stimuli to see how retinal response varied after control (saline) and experimental (E\(_2\)) injection. Retinal sensitivity to varying intensities light stimuli was measured with an electroretinogram (ERG). An ERG measures electrical activity of the retina in response to light stimuli. Analysis of the amplitude of the b-wave, which measures the ON response of the bipolar cells, was used to determine levels of retinal sensitivity. Results thus far have been inconsistent; E\(_2\) has decreased as well as increased b-wave amplitude in experimental subjects. Future directions include increasing control and experimental sample size and changing E\(_2\) concentration.

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