

Bisphenol A affects the pulsing rate of *lumbriculus variegatus* via an estrogenic endocrine disrupting mechanism

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Bisphenol A (BPA) is a widely used component of consumer plastics and a common environmental chemical. Previously, we showed that BPA affected the physiology of the freshwater oligochaete *Lumbriculus variegatus*. In the present study, we examined whether the impact of BPA on *L. variegatus* was mediated by an endocrine disrupting mechanism, using pulsing rate of the dorsal blood vessel as the endpoint. Both long term and acute exposures to BPA increased the pulsing rate. The former had a distinct inverted-U dose response relationship, while the latter had a monotonic one. The effects of BPA were mimicked by the synthetic estrogen ethinylestradiol. The sensitivity of *L. variegatus* to estrogens was exquisite, with detectable effects at pM range. Both the long term and acute effects of BPA were partially or fully blocked by various antagonists of mammalian estrogen receptors, including ICI 162,780, MPP and G15. Our results suggest that the impacts of BPA on pulsing rate of *L. variegatus* are likely mediated by activation of an estrogen receptor. Our results also have implication for the endocrine physiology of oligochaete, and for the evolution of estrogen receptors.

Biography

Yuyang Wang is a senior at Hefei No 8 Senior High School and is interested in zoology and biology. She performed the experiments reported here during the 2018 summer