Plasticizers, additives that increase the malleability of plastic products, have become a ubiquitous form of environmental pollution due to their ability to leach off of obj ˛ leach

phthalate diesters, is a particularly prevalent and harmful pollutant. The carbonyl functional groups on DEHP withdraw electrons from water molecules, creating reactive oxygen species, which can trigger oxidative stress and large-scale, irreversible cell damage (2). A comprehensive body of research has linked DEHP to numerous health hazards, including impaired locomotion (3), damage to the endocrine, reproductive, cardiac, hepatic, and renal systems (4), emotional, cognitive, and neurodevelopmental decline (5), and an increased risk of certain behavioral on the neuromuscular system at the organismal scale

have been studied extensively, its effects at the cellular level are not fully understood. Particularly, there is a lack of clarity on how DEHP and rosmarinic acid affect the central pattern generator (CPG), a neural circuit that controls walking. In this study, we examined the effects of DEHP and rosmarinic acid exposure on the mammalian spinal CPG and its conditions containing DEHP (100μM) with and

without a 1-hour long preincubation in rosmarinic acid (50μM,100μM). We also recorded a wash in the control condition to assess the reversibility of DEHP-induced damage. We analyzed the data we collected for peak amplitude, burst duration, and cycle period in Spike 2.

In the presence of 100μM DEHP, we observed significant increases in burst duration and cycle period occurring in the wash condition indicates that DEHP disrupts the CPG’s ability to regulate locomotor activity

and may induce excitotoxicity. Additionally, preliminary results suggest that rosmarinic acid at the 50μM concentration potentially mitigates these harmful effects. Future research should be conducted evaluating higher concentrations of DEHP and longer exposure times to build a more complete understanding of its risks.

1. Erythropel, H. C., Maric, M., Nicell, J. A., Leask, R. L., & Yargeau, V. (2014). Leaching of the plasticizer di(2-ethylhexyl)phthalate (Dehp) from plastic containers and the question of human exposure. ***Applied Microbiology and Biotechnology***, 98(24), 9967–9981.
2. Wu, H., Liu, Q., Yang, N., & Xu, S. (2023). Polystyrene-microplastics and DEHP co-exposure induced DNA damage, cell cycle arrest and necroptosis of ovarian granulosa cells in mice by promoting ROS production. ***Science of The Total Environment***, 871, 161962.
3. Tseng, I. L., Yang, Y. F., Yu, C. W., Li, W. H., & Liao, V. H. (2013). Phthalates induce neurotoxicity affecting locomotor and thermotactic behaviors and AFD neurons through oxidative stress in ***Caenorhabditis elegans***. ***PloS one***, ***8***(12), e82657. https://doi.org/10.1371/journal.pone.0082657
4. Rowdhwal, S. S. S., & Chen, J. (2018). Toxic effects of di-2-ethylhexyl phthalate: An overview. ***BioMed Research International***, 1–10.
5. Kang, J. S., Baek, J. H., Song, M. Y., Rehman, N. U., Chung, H. J., Lee, D. K., Yoo, D. Y., & Kim, H. J. (2023). Long-term exposure changes the environmentally relevant bis(2-ethylhexyl) phthalate to be a neuro-hazardous substance disrupting neural homeostasis in emotional and cognitive functions. ***Environmental Pollution***, 324, 121387.
6. Shih, P.-C., Chen, H.-P., Hsu, C.-C., Lin, C.-H., Ko, C.-Y., Hsueh, C.-W., Huang, C.-Y., Chiu, T.-H., Wu, C.-C., Ho, Y.-C., Nguyen, N. U. N., Huang, S.-C., Fang, C.-C., Tzou, S.-J., Wu, Y.-J., Chen, T.-Y Hsueh,