

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 objects.

Diethylhexyl phthalate (DEHP), a phthalate diester, 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 a system-wide decrease in behavioral 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. DEHPs (100 μ M) with and

without a 1-hour long preincubation in rosmarinic acid (50 μ M, 100 μ M). 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 100 μ M DEHP, we observed significant increases in burst duration and cycle period occurring in the mammalian spinal CPG's ability to regulate locomotor activity

and may induce excitotoxicity. Additionally, preliminary results suggest that rosmarinic acid at the 50 μ M 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.

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