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Title: The chemotherapeutic agent paclitaxel selectively impairs learning while sparing source memory and spatial memory

Author: Alexandra E. Smith Richard A. Slivicki Andrea G. Hohmann Jonathon D. Crystal



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Running title: Paclitaxel selectively impairs learning

Order of Authors: Alexandra E. Smith^a, Richard A. Slivicki^a, Andrea G. Hohmann^{a,b}, Jonathon D. Crystal^a

^aDepartment of Psychological and Brain Sciences, Indiana University, Bloomington, IN;

^bGill Center for Biomolecular Science, Indiana University, Bloomington, IN

Corresponding Author: Jonathon D. Crystal

Department of Psychological & Brain Sciences, Indiana University, Bloomington, IN, 47405-7007, USA

E-mail: jcrystal@indiana.edu

Phone: 812- 856-2246

Fax: 812-855-4691

Highlights

- Treatment with paclitaxel did not impair spatial and episodic memory
- Paclitaxel treated rats were not more susceptible to cognitive challenges
- Paclitaxel impaired learning of new rules
- Paclitaxel decreased sensitivity to changes in experimental contingencies

Abstract: Chemotherapeutic agents are widely used to treat patients with systemic cancer. The efficacy of these therapies is undermined by their adverse side-effect profiles such as cognitive deficits that have a negative impact on the quality of life of cancer survivors. Cognitive side effects occur across a variety of domains, including memory, executive function, and processing speed. Such impairments are exacerbated under cognitive challenges and a subgroup of patients experience long-term impairments. Episodic memory in rats can be examined using a source memory task. In the current study, rats received paclitaxel, a taxane-derived chemotherapeutic agent, and learning and memory functioning was examined using the source memory task. Treatment with paclitaxel did not impair spatial and episodic memory, and paclitaxel treated rats were not more susceptible to cognitive challenges. Under conditions in which memory was not impaired, paclitaxel treatment impaired learning of new rules, documenting a decreased sensitivity to changes in experimental contingencies. These findings provide new information on the nature of cancer chemotherapy-induced cognitive impairments, particularly regarding the incongruent vulnerability of episodic memory and new learning following treatment with paclitaxel.

Keywords: episodic memory; source memory; spatial memory; learning; paclitaxel; rats

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