

Neurotoxic Potential of Depleted Uranium—Effects in Primary Cortical Neuron Cultures and in *Caenorhabditis elegans*

George C.-T. Jiang,* Kristen Tidwell,† Beth Ann McLaughlin,† Jiyang Cai,‡ Ramesh C. Gupta,§ Dejan Milatovic,¶
Richard Nass,¶ and Michael Aschner¶,1

*Department of Physiology and Pharmacology, Wake Forest University School of Medicine, Winston-Salem, North Carolina 27157-1083; †Department of Neurology; ‡Vanderbilt Eye Institute, Vanderbilt University, Nashville, Tennessee 37232; §Toxicology Department, Murray State University, Hopkinsville, Kentucky 42240; and ¶Department of Pediatrics, Vanderbilt University, Nashville, Tennessee 37232

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Depleted uranium (DU) is an extremely dense metal that is used in radiation shielding, counterbalances, armor, and ammunition. In light of the public concerns about exposure to DU and its potential role in Gulf War Syndrome (GWS), this study evaluated the neurotoxic potential of DU using focused studies on primary rat cortical neurons and the nematode *Caenorhabditis elegans*. We examined cell viability, cellular energy metabolism, thiol metabolite oxidation, and lipid peroxidation following exposure of cultured neurons to DU, in the form of uranyl acetate. We concurrently evaluated the neurotoxicity of uranyl acetate in *C. elegans* using various neuronal–green fluorescent protein reporter strains to visualize neurodegeneration. Our studies indicate that uranyl acetate has low cytotoxic potential, and uranium exposure does not result in significant changes in cellular energy metabolism, thiol metabolite oxidation, or lipid peroxidation. Furthermore, our *C. elegans* studies do not show any significant neurodegeneration following uranyl acetate exposure. Together, these studies suggest that DU, in the form of uranyl acetate, has low neurotoxic potential. These findings should alleviate the some of public concerns regarding DU as an etiologic agent of neurodegenerative conditions associated with GWS.

Key Words: depleted uranium; primary neurons; neurotoxicity; Gulf War Syndrome; *C. elegans*.