Journal of Heavy Metal Toxicity and Diseases
ISSN: 2473-6457

Open access Commentary

Chelation Therapy for Neurological Disorders Arising due to Metal Poisoning

Zhang Lan*

Department of Chemistry, Lanzhou University, China

DESCRIPTION

Neurological disorders resulting from metal poisoning have become a growing concern in recent years, as industrialization and environmental factors expose individuals to various toxic metals such as lead, mercury, and cadmium. These heavy metals can accumulate in the body over time, leading to severe neurological damage and cognitive impairment. In such cases, chelation therapy has emerged as a promising treatment option to mitigate the effects of metal poisoning on the central nervous system. Metal poisoning occurs when the body is exposed to high levels of toxic metals, either through occupational exposure, contaminated food and water sources, or other environmental factors. Once these metals enter the bloodstream, they can cross the blood-brain barrier and accumulate in neural tissues, disrupting normal cellular processes. Over time, this accumulation can lead to a range of neurological disorders, including cognitive decline, memory loss, motor dysfunction, and even more severe conditions such as Parkinson's disease and Alzheimer's disease. Chelation therapy involves the administration of chelating agents, which are compounds designed to bind with and remove toxic metals from the body. These agents have a high affinity for certain metals, forming stable complexes that are then excreted through urine or feces. The primary goal of chelation therapy in cases of metal-induced neurological disorders is to reduce the metal burden in the body, thereby minimizing further damage to the nervous system. One of the most commonly used chelating agents is ethylenediaminetetraacetic acid (EDTA). EDTA forms stable complexes with a variety of metals, making it effective in removing heavy metals like lead and mercury from the body. Other chelating agents include dimercaptosuccinic acid (DMSA) and dimercaprol (BAL), each with specific affinities for different metals. Chelation therapy has shown promise in treating neurological disorders arising from metal poisoning, particularly in cases of acute heavy metal poisoning. In lead poisoning, for instance,chelation therapy has been demonstrated to reduce blood lead levels and improve cognitive function in children with lead toxicity. Similarly, studies have suggested that chelation therapy may be beneficial for mercury toxicity, especially in cases of methylmercury exposure. However, the efficacy of chelation therapy for chronic metal exposure and its associated neurological disorders remains a topic of debate. Some studies have reported positive outcomes, while others have shown limited benefits. It's important to note that chelation therapy is not without risks and potential side effects, including kidney damage, allergic reactions, and disturbances in mineral balance. Therefore, the decision to pursue chelation therapy should be carefully considered and individualized based on the specific metal involved, the severity of toxicity, and the overall health of the patient. Chelation therapy is often used in conjunction with other treatment modalities to optimize outcomes. Nutritional supplements such as antioxidants and essential minerals may be administered alongside chelating agents to counteract the oxidative stress and mineral imbalances associated with metal poisoning. In the realm of research, advancements in targeted chelation therapies are being explored to enhance the selectivity and efficacy of metal removal. Nanoparticles and molecularly engineered compounds are being developed to specifically target metal ions in affected tissues while minimizing damage to healthy cells. Such innovations hold the potential to revolutionize chelation therapy and provide more effective treatments for metal-induced neurological disorders.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

The author states there is no conflict of interest.

Received:	01-May-2023	**Manuscript No:**	ipjhmct-23-17452
Editor assigned:	03-May-2023	**PreQC No:**	ipjhmct-23-17452 (PQ)
Reviewed:	17-May-2023	**QC No:**	ipjhmct-23-17452
Revised:	22-May-2023	**Manuscript No:**	ipjhmct-23-17452 (R)
Published:	29-May-2023	**DOI:**	10.21767/2473-6457.23.3.24

Corresponding author Zhang Lan, Department of Chemistry, Lanzhou University, China, E-mail:zh_l@hotmail.com

Citation Lan Z (2023) Chelation Therapy for Neurological Disorders Arising due to Metal Poisoning. J Heavy Met Toxicity Dis. 08:24.