

## Nutraceuticals in the Prevention and Therapy of Lead Toxicity

Dear Editor:

Lead has been a known toxin affecting human health and concern to the community especially by virtue of its developmental toxicity effects. Although chelation therapy has been the mainstay for the therapy against lead toxicity, it is important to realize other strategies to prevent and combat the adverse effects of lead in humans. Deficiency of several essential nutrients viz. vitamins, essential elements have been shown to exacerbate the toxic effects of metals and supplementation of such nutrient ameliorates the toxicity. It is important to evaluate the present levels of metal exposure and the dietary nutrient supplement that might either augment or protect against adverse effects of the metals so that multifaceted components contributing to safety can be incorporated into regulatory decisions. Lead has shown serious interactions and correlations with such nutritional components that may help augment its toxicity. In addition to the role of micronutrients in modifying the metal toxicity, these nutritional components (vitamins, essential metals etc) can also act as a complimentary chelating agents or an 'adjuvant' for increasing the efficacy of a known chelator or through acting independently. Nutrients can affect toxicity of lead by interacting at its primary site of action. These nutrients are also expected to modify the body response to lead by altering its toxicokinetic. Recently, role of many dietary antioxidants (natural and synthetic) has been tried with some interesting outcome. S-adenosyl L-methionine (SAM) is an amino acid and a precursor of glutathione, which is currently receiving lot of attention for its beneficial role in the prophylaxis of metal intoxication. A promising role of SAM as an "adjuvant" to lead chelators has been suggested. Some of the antioxidants too have been tried successfully in experimental animals when administered during chelation treatment against lead toxicity. It thus strongly support the theory that they have a major role to play in future approach towards finding a safe, suitable and an effective treatment for metal intoxication. Although, synthetic antioxidants like n-acetylcysteine too have been tried, however it is recommended that many of the natural antioxidants have a better role during chelation with strong chelators, using less toxic dose, to get optimum effects and fewer side effects. This presentation will focus on major experimental work carried out, on the influence of various nutritional factors on lead toxicity by our group and also point out scope for future research. The presentation will also provide an overview of the topic, taking a closer look at consistencies, inconsistencies, and future direction for the use of nutritional factors as a component of management of lead toxicity.

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