

# **Title: Bone marrow-derived mesenchymal stem cells attenuate the subchronic adverse effect of lead acetate on the kidney of adult albino rat**

## **Abstract:**

There is deficient data in literature about the role of bone marrow-derived mesenchymal stem cells (BMSCs) against lead induced-nephrotoxicity. Also, the literature is deficient in correlation between the structural and functional alterations and improvements. The present study is designed to explore the therapeutic role of bone marrow-derived mesenchymal stem cells (BMSCs) against lead induced-nephrotoxicity as regarding the structural and functional changes. Twenty-one adult albino rats, 2-3 month old and weighing 180-200 g, were divided into 3 equal groups: control group, lead intoxicated group (30 mg/ kg b. wt/ three times a week orally for eight weeks) and lead intoxicated followed by single injection of BMSCs group. At the end of the experiment, the kidney functions were assessed and kidney specimens were processed for paraffin sections and stained with hematoxylin and eosin (H&E), Masson's trichrome (MT) and periodic Acid-Schiff (PAS) stains. Other sections were processed for immunohistochemical demonstration of CD24. Image analyzer was used to analyze the results morphometrically and statistically. BMSCs administration to lead intoxicated animals elicited significant reduction in serum urea and creatinine levels and kidney/body weight ratio also; there was significant increase of total antioxidant levels in comparison to lead intoxicated group. BMSCs improved shrinkage of glomeruli, widening of the urinary spaces, degeneration of convoluted tubules and interstitial fibrosis in lead intoxicated animals. BMSCs attenuated effectively some biochemical and histological changes in lead nephrotoxicity.