

Original Paper

## Effect of green tea extract (*Camellia sinensis*) on kidney toxicity induced by sodium arsenite: a stereological study

Shariatzadeh SMA (Ph.D)<sup>1</sup>, Soleimani Mehranjani M (Ph.D)<sup>2</sup>  
Shahmohammadi R (B.Sc)\*<sup>3</sup>, Naderi Noreini S (B.Sc)<sup>4</sup>

<sup>1</sup>Professor, Department of Biology, Faculty of Science, Arak University, Arak, Iran. <sup>2</sup>Associate Professor, Department of Biology, Faculty of Science, Arak University, Arak, Iran. <sup>3</sup>M.Sc Student of Developmental Cell Biology, Department of Biology, Faculty of Science, Arak University, Arak, Iran. <sup>4</sup>M.Sc in Developmental Cell Biology, Department of Biology, Faculty of Science, Arak University, Arak, Iran.

---

### Abstract

**Background and Objective:** Sodium Arsenite is an environmental pollutant which can generate free radicals causing tissue damage. This study was done to evaluate the effect of Green Tea (GTE), as a strong antioxidant, on kidney tissue in mice treated with Sodium Arsenite.

**Methods:** In this experimental study 24 adult male NMRI mice were randomly allocated into four groups including: control, GTE (100mg/kg/day), Sodium Arsenite (5mg/kg/day) and Sodium Arsenite + GTE, for 34 days, orally. Animals were scarified and left kidney was taken out, fixed, sectioned, processed and stained using Heidenhain'azan method. Using stereological technique the total volume of kidney, volume of cortex, medulla, proximal and distal tubule, renal corpuscle, glomerulus, tuft and capillary, membrane and space of Bowman's capsule and length of proximal and distal tubule were determined. Creatinine, BUN and MDA serum samples were measured.

**Results:** The mean of total volume of cortex, proximal tubule, distal tubule, renal corpuscle and glomerulus, tuft, Bowman's capsule space, size of epithelium and lumen of proximal and distal tubule were significantly reduced in Sodium Arsenite group compared to control ( $P<0.05$ ). These parameters were significantly increased in the Sodium Arsenite + GTE group in comparison with Sodium Arsenite group ( $P<0.05$ ). The creatinine, Blood urea nitrogen (BUN) and MDA were significantly increased in the Sodium Arsenite group in compared to the control group ( $P<0.05$ ). These parameters were significantly reduced in the Sodium Arsenite + GTE group in comparison with Sodium Arsenite group ( $P<0.05$ ).

**Conclusion:** Green tea has a protective role in Sodium Arsenite induced nephrotoxicity.

**Keywords:** Kidney, Green Tea, Sodium Arsenite, Stereology, Mouse

---

\* Corresponding Author: Shahmohammadi R (M.Sc), E-mail: [rj.shahmohammadi@gmail.com](mailto:rj.shahmohammadi@gmail.com)

Received 9 Nov 2014

Revised 20 Dec 2014

Accepted 10 Jan 2015