

Protective effect of *Juglans nigra* on sodium arsenite-induced toxicity in rats

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ABSTRACT

Background Consumption of arsenic contaminated water has been implicated in metalloid-induced carcinogenesis. Dietary intake of certain plant products with chemoprotective properties may protect against the onset of diseases and promote maintenance of health. **Objectives** We investigated the outcome of black walnut *Juglans nigra* (JN) consumption on sodium arsenite (SA)-induced toxicity in rats. **Materials and Methods** Wister albino rats were treated as follows: Control, SA only (positive control) (2.5 mg/kg body weight), JN only (100 mg/kg weight), and JN+SA coadministered. After 5 weeks animals were sacrificed whole blood, femur, liver and testis harvested were assessed for hepatic transaminases and clastogenicity. Histology of the liver, sperm morphology and quality were also assessed. Data were analyzed (ANOVA) and expressed as means $\pm$ SD. **Results** SA treatment elevated hepatic transaminases level in serum ($P < 0.05$), induced histological changes in liver: fibroplasia and periportal hepatocytes infiltration by mononuclear cells. These changes were ameliorated by JN ($P < 0.05$) coadministration. SA induced micronuclei formation ($P < 0.05$). Again JN decreased ($P < 0.05$) micronuclei formation by 50%. Sperm count and motility decreased ($P < 0.05$) in all groups compared to control. **Conclusion** JN showed no protection against arsenite effect on sperm quality. Hepatoprotective and anticlastogenic effects were apparent suggesting a chemopreventive potential active against arsenite genotoxicity and chromosomal instability which have implication for metalloid-induced carcinogenesis.

KEYWORDS

Carcinogenesis . chemoprevention . *Juglans nigra* . micronuclei . sodium arsenite

REFERENCES