



PINITOL AS DNA PROTECTOR AGAINST HYDROXYL AND PEROXYL RADICALS-INDUCED DNA DAMAGE

 Sanja Matic¹, Snežana Stanić² 

¹University of Kragujevac, Institute for Information Technologies Kragujevac, Department of Science, Jovana Cvijića bb, 34000 Kragujevac, Serbia,

²University of Kragujevac, Faculty of Science, Department of Biology and Ecology, Radoja Domanovića 12, 34000 Kragujevac, Serbia

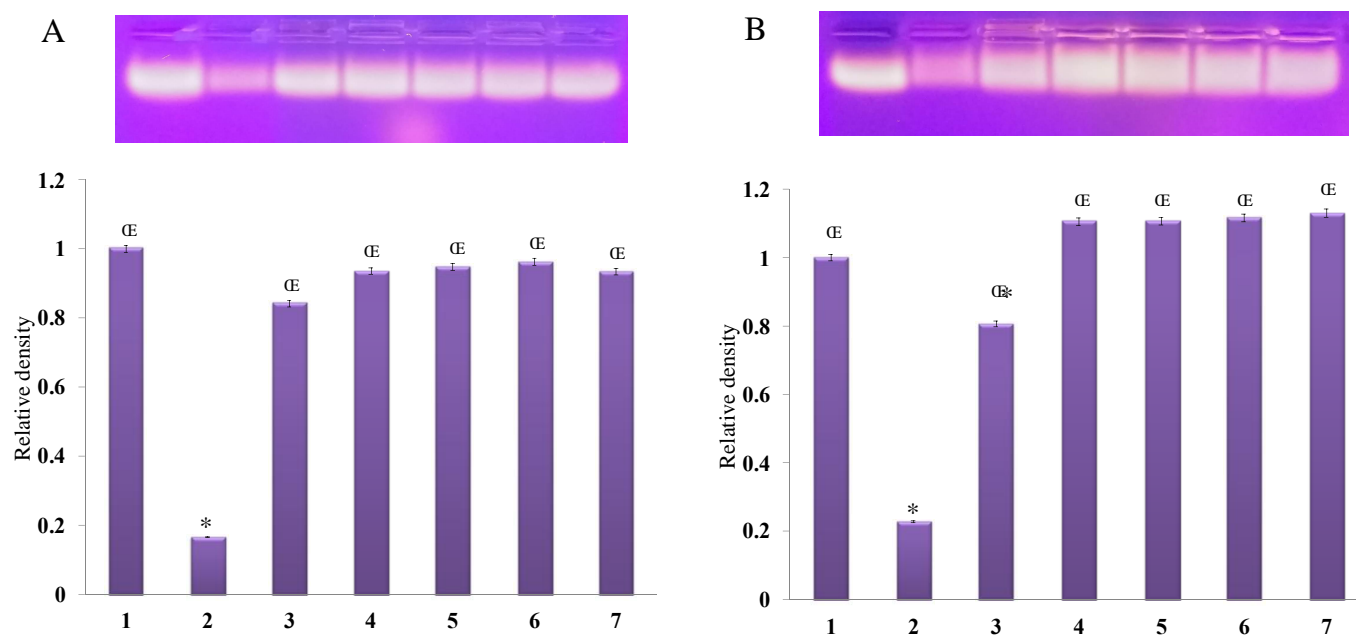
Corresponding author: sanjamatic@kg.ac.rs

INTRODUCTION

Oxidative damage to DNA plays a crucial role in the progression and development of numerous diseases. Preventing DNA from oxidative damage is crucial for any living organism. The present study was aimed to investigate the *in vitro* DNA protective effect of pinitol, a dietary inositol present in *Ceratonia siliqua* L., against hydroxyl and peroxy radicals-induced oxidative DNA damage. Pinitol exhibits numerous pharmacological properties such as anticancer, antidiabetic, antioxidant, hepatoprotective, immunosuppressor, antiosteoporosis, antiaging, preventive and ameliorative of Alzheimer's disease etc.

METHOD

The protective activity of pinitol at various concentrations (25, 50, 100, and 200 μ g/mL) was assayed *in vitro* using DNA from herring sperm as a model system, FeSO₄ and H₂O₂ for the generation of hydroxyl radicals, (2-methylpropionamide) dihydrochloride (AAPH) for oxidative DNA damage and assays for the detection of hydroxyl and peroxy radicals-induced DNA damage.



Agarose gel electrophoresis of protective effect of pinitol against hydroxyl (A) and peroxy (B) radicals-induced DNA damage. DNA from herring sperm (lane 1, negative control), DNA damage control (lane 2, positive control), quercetin (lane 3, 100 μ g/mL, standard), pinitol at the concentrations of 25, 50, 100, and 200 μ g/mL (lanes 4-7).

*p < 0.05 when compared with the negative control group; GE p < 0.05 when compared with the positive control group

RESULTS

Pinitol showed DNA-protective effect at all tested concentrations against hydroxyl radical in a dose-dependent manner. Concentration-response of pinitol indicated that protection against peroxy radical induced DNA damage was more significant with the increase in pinitol concentration.

CONCLUSIONS

This investigation showed that pinitol can use as DNA protector against oxidative damage caused by hydroxyl and peroxy radicals.

ACKNOWLEDGEMENTS

This work was supported by the Serbian Ministry of Education, Science and Technological Development (Agreement No. 451-03-9/2021-14/200378 and Agreement No. 451-03-9/2021-14/200122).

