

Comparison of antioxidant effects of hydro-alcoholic extract of *Nigella sativa* and *Curcuma longa* with Vitamin C on renal tissue oxidative stress parameters in rats

Reza Mohebbati¹, Saeed Reza Ghanbarizadeh², Farimah Beheshti^{1*}

1- Department of Physiology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

2- Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

***Corresponding Author:** Department of Physiology, Faculty of Medicine, Mashhad University of Medical Sciences

Email: BeheshtiF931@mums.ac.ir

Abstract

Background and Aim: The aim of this study was to compare the effects of hydro-alcoholic extract of *Curcuma longa* (C.L E) and *Nigella sativa* (N.S E) with Vitamin C on renal-oxidative damage in rats.

Methods: 40 male Wistar rats were randomly divided into five groups (n=8) as follows: A Control group with plain drinking water and intervention groups including positive control groups with Vitamin C (100 mg/kg), the N.S E (200 mg/kg) group, the C.L E (1000 mg/kg) group and N.S E and C.L E group (receiving 200 and 1000 mg/kg, respectively), all dissolved in drinking water and fed during the 35 days of the experiment. At the end of this period, the renal tissues were removed and oxidation-reduction markers were investigated.

Results: N.S E ($P < 0.001$), C.L E and vitamin C ($P < 0.01$) decreased serum creatinine and BUN levels in comparison to the control group. Not only were the levels of total thiol higher in the Vitamin C ($P < 0.001$), N.S E, C.L E ($P < 0.05$) and N.S E and C.L E ($P < 0.01$) groups compared to the control group, but also the superoxide dismutase (SOD) activity was more elevated in Vitamin C and N.S E and C.L E groups ($P < 0.01$). Malondialdehyde (MDA) concentrations in the N.S E and C.L E, N.S E ($P < 0.001$) and Vitamin C ($P < 0.05$) groups were lower than those in the control group.

Conclusion: In the current study, it was found that N.S E and C.L E have a significant effect on the improvement of renal oxidative stress; which is comparable to Vitamin C. A higher synergistic effect of N.S E and C.L E suggested that they are more effective combined than when used separately.

Keywords: *Nigella sativa*, *Curcuma longa*, Vitamin C, Oxidative stress