Indian Journal of Experimental Biology
Vol. 61, December 2023, pp. 946-952
DOI: 10.56042/ijeb.v61i12.2738

Prevention of dabigatran induced cytotoxicity by N-acetyl cysteine: An *in vitro* study

Özer Aylin Gürpinar[1]* & Emre Kubat[2]

[1]Department of Biology, Faculty of Science, Hacettepe University, 06800 Beytepe, Ankara, Turkey
[2]Department of Cardiovascular Surgery, Gülhane Training and Research Hospital, 06010 Etlik, Ankara, Turkey

Received 09 April 2022; revised 15 June 2023

Dabigatran (DBG) is an oral direct thrombin inhibitor used for prevention of systemic embolism and venous thromboembolism. The major side effect of DBG is gastrointestinal upset. In the present study, we have investigated whether N-acetyl cysteine (NAC) showed a protective effect on dabigatran-induced cytotoxicity in the *in vitro* setting. The medium not containing DBG but containing NAC were served to assay the effect of NAC on cell proliferation and apoptosis. Comparing DAB and all other groups, the cell viability was the lowest in the D group. However, there was no statistically significant difference between the NAC I and DBG-NAC I group, while the difference was statistically significant compared to all other groups. The cells in the DBG group showed a degenerative and round-shaped morphology with nuclear condensation. In other dilutions, the cell morphology was healthy with a fibroblastic morphology. Based on our study results, NAC at high concentrations exerts cytoprotective effects against DBG, while moderate or low concentrations have no favorable effect on cell viability of NAC. Although using concomitant NAC at appropriate doses appears to be effective agent against dabigatran cytotoxicity in the current study, further experimental and clinical studies are needed to confirm our findings.

Keywords: Antioxidant agent, Apoptosis, Direct thrombin inhibitor, Gastrointestinal upset