Introduction: Apocynin (4-hydroxy-3-methoxy-acetophenone), naturally occurring methoxy-substituted catechol, extracted from the roots of Apocynum cannabinum (Canadian hemp) and Picrorhiza kurroa (Scrophulariaceae) is well known an inhibitor of NADPH oxidase. Aim: This study was designed to examine the possible protective effect of apocynin, a NADPH oxidase inhibitor, against torsion-detorsion (TD) induced ischemia/reperfusion (I/R) injury in testis.

Material and Methods: Male Wistar albino rats were divided into sham-operated control, and either vehicle, apocynin 20 mg/kg or apocynin 50 mg/kg-treated TD groups. In order to induce I/R injury, left testis was rotated 720 degrees clockwise for 4 hours (torsion) and then allowed reperfusion (detorsion) for 4 hours. Testicular morphology was examined by light microscopy. Left orchiectomy was done for the measurement of tissue malondialdehyde (MDA), glutathione (GSH) levels, myeloperoxidase (MPO) activity, and luminol, lucigenin, nitric oxide (NO) and peroxynitrite chemiluminescences (CL).

Results: I/R caused significant increases histological damage and luminol, lucigenin, nitric oxide and peroxynitrite chemiluminescence demonstrating increased reactive oxygen and nitrogen metabolites in tissue. As a result of increased oxidative stress tissue MPO activity, MDA levels were increased and antioxidant GSH was decreased. On the other hand, apocynin treatment reversed histopathological alterations, as well as all these biochemical indices that were induced by I/R.

Conclusion: Findings of the present study suggest that NADPH oxidase inhibitor apocynin by inhibiting free radical generation and increasing antioxidant defense exerts protective effects on testicular tissues against I/R.