ABSTRACT

Aim: To investigate neuroprotective activity of allopurinol and nimesulide in cerebral ischemia reperfusion injury in normal and STZ induced diabetic rats.

Methods: In the present study, wistar albino rats of either sex weighing 150-250 gm were procured from authorized suppliers. Rats were anesthetized by giving thiopentone sodium (45 mg/kg) by i.p. Surgical technique for the induction of cerebral ischemia was adopted from the earlier published method. Under anesthesia midline incision was given. Common carotid arteries were identified and isolated carefully from vago-sympathetic nerve. Rats were made ischemic by occluding bicommon carotid arteries with thread for 30 min, followed by reperfusion for 4 h by removing the occlusion. The drugs allopurinol (15, 30 mg/kg) and nimesulide (20, 40 mg/kg) were administered 10 min before reperfusion. Then after 4 h reperfusion, animals were sacrificed and immediately brain was removed, homogenized, centrifuged and supernatant was collected, then various enzyme estimations were done and same procedure was followed in STZ (45 mg/kg; i.p.) induced diabetic rats.

Results: In I/R group showed significant increase in malondialdehyde, myeloperoxidase and depletion in catalase and superoxide dismutase levels was observed. Treatment with allopurinol and nimesulide significantly decreased the MDA and MPO levels whereas increased the SOD and CAT levels when compared I/R group in both non-diabetic and diabetic rats.

Conclusion: These findings suggest the cerebral injury due to over production of free radicals was inhibited by Allopurinol and nimesulide that exert effect probably by radical scavenging and antioxidant activities.

Keywords: Reperfusion cerebral ischemia, Allopurinol, Nimesulide, Oxidative stress.