World Academy of Science, Engineering and Technology
International Journal of Pharmacological and Pharmaceutical Sciences
Vol:12, No:08, 2018

Evaluation of Neuroprotective Potential of Olea europaea and Malus domestica in Experimentally Induced Stroke Rat Model

Authors : Humaira M. Khan, Kanwal Asif

Abstract : Ischemic stroke is a neurological disorder with a complex pathophysiology associated with motor, sensory and cognitive deficits. Major approaches developed to treat acute ischemic stroke fall into two categories, thrombolysis and neuroprotection. The objectives of this study were to evaluate the neuroprotective and anti-thrombolytic effects of Olea europaea (olive oil) and Malus domestica (apple cider vinegar) and their combination in rat stroke model. Furthermore, histopathological analysis was also performed to assess the severity of ischemia among treated and reference groups. Male albino rats (12 months age) weighing 300- 350gm were acclimatized and subjected to middle cerebral artery occlusion method for stroke induction. Olea europaea and Malus domestica was administered orally in dose of 0.75ml/kg and 3ml/kg and combination was administered at dose of 0.375ml/kg and 1.5ml/kg prophylactically for consecutive 21 days. Negative control group was dosed with normal saline whereas piracetam (250mg/kg) was administered as reference. Neuroprotective activity of standard piracetam, Olea europaea, Malus domestica and their combination was evaluated by performing functional outcome tests i.e. Cylinder, pasta, ladder run, pole and water maize tests. Rats were subjected to surgery after 21 days of treatment for analysis from stroke recovery. Olea europaea and Malus domestica in individual doses of 0.75ml/kg and 3ml/kg respectively showed neuroprotection by significant improvement in ladder run test (121.6± 0.92;128.2 ± 0.73) as compare to reference (125.4 ± 0.74). Both test doses showed significant neuroprotection as compare to reference (9.60 ± 0.50) in pasta test (8.40 ± 0.24;9.80 ± 0.37) whereas with cylinder test, experimental groups showed significant increase in movements (6.60 ± 0.24; 8.40 ± 0.24) in contrast to reference (7.80 ± 0.37).There was a decrease in percentage time taken f to reach the hidden maize in water maize test (56.80 ± 0.58;61.80 ± 0.66) at doses 0.75ml/kg and 3ml/kg respectively as compare to piracetam (59.40 ± 1.07). Olea europaea and Malus domestica individually showed significant reduction in duration of mobility (127.0 ± 0.44; 123.0 ± 0.44) in pole test as compare to piracetam (124.0 ± 0.70). Histopathological analysis revealed the significant extent of protection from ischemia after prophylactic treatments. Hence it is concluded that Olea europaea and Malus domestica are effective neuroprotective agents alone as compare to their combination.

Keywords : ischemia, Malus domestica, neuroprotection, Olea europaea
Conference Title : ICCNT 2018 : International Conference on Clinical Neuropharmacology and Therapeutics
Conference Location : Paris, France
Conference Dates : August 27-28, 2018