Neurodegenerative Diseases

EFFECT OF FERULIC ACID AGAINST QUINOLIC ACID INDUCED HUTINGTON`S DISEASE LIKE SYMPTOMS IN RATS

N. Kumar[3] *R. Deshmukh[2] , H. Kaur[4] , P. Kumar[3]*

[1]Department of Pharmaceutical Sciences and Technology, Maharaja Ranjit Singh Punjab technical University, India

[2]Department of Pharmaceutical Sciences and Technology, Maharaja Ranjit Singh Punjab technical University, India

[3]Department of Pharmaceutical Sciences and Technology, Maharaja Ranjit Singh Punjab technical University, India

[4]Department of Pharmaceutical Sciences and Technology, Maharaja Ranjit Singh Punjab Technical University, India

Huntington's disease is characterized by mutation in the huntingtin gene and degradation of GABAergic medium spiny neurons in striatum resulting in hyperkinetic choreic movements, psychiatric and cognitive disturbances. Quinolinic acid is a neurotoxin that mimics HD like pathological condition by inducing cascade of events such as excitotoxicity, ATP depletion, oxidative stress, neuroinflammation and GABAergic neuronal damage. Ferulic acid is a phytochemical with anti-oxidant, anti-inflammatory properties and has anti-depressant like effect. Therefore, the present study was designed to investigate the beneficial effect of ferulic acid in QA-induced Huntington's disease like symptoms in rats and explore its possible mechanism. QA (200 nmol/2 µl) was infused bilaterally directly into rat striatum on day 1. Ferulic acid (25 and 50mg/kg; p.o) treatment was given to rats from day 2 to day 22. Assessment of body weight and behavioral parameters were conducted at weekly intervals. Animals were sacrificed on 23rd day and biochemical, inflammatory and neurochemical estimation were carried out in isolated rat striatum. QA infusion brought an alteration in body weight, locomotor activity, motor coordination, oxidative and inflammatory processes and levels of striatal neurotransmitters. The study demonstrates that ferulic acid treatment significantly ameliorated these alterations in QA infused rats. Thus, the neuroprotective effect of ferulic acid may be attributed to its antioxidant, anti-inflammatory properties and its ability to restore striatal neurochemistry.