

Combinational effect of ethyl pyruvate, berberine and poloxamer 188 provides better protection against animal model of Huntington's disease

Pallavi Bhosle, Pravinkumar Bhutada, Ashwini Sonawane and Parth Shah
Sinhgad College of Pharmacy, India

3-Nitropropionic acid (3-NP) is a well versed experimental model to study Huntington's disease (HD) induced motor, memory and mitochondrial dysfunctions. Ethyl pyruvate, berberine and poloxamer 188 are reported to exhibit neuroprotective effect in various animal models. Moreover, berberine is reported to protect against memory dysfunction. In addition, poloxamer 188 reduces muscular atrophy and neuronal loss. These evidences suggest that either single or combination of these agents may protect against 3-NP model. Administration of 3-nitropropionic acid (10 mg/kg) for 14 days in male Wistar rats significantly induced HD like symptoms in rats as indicated by reduced locomotor activity, body weight, grip strength, oxidative defense, cognition and mitochondrial complex enzymes activities in striatum, cortex and hippocampus. Marked elevation in lactate dehydrogenase (LDH), succinate dehydrogenase (SDH) and lipid peroxidation were also observed. Also, decrease in levels of reduced glutathione was noted. However, pretreatment of combination [Ethyl pyruvate (40 mg/kg), berberine (50 mg/kg) and poloxamer 188 (40 mg/kg)] significantly attenuated behavioral alterations, oxidative stress, neuronal loss and mitochondrial enzymes complex dysfunction in 3-NP treated group, and potentiate their respective protective effects. In conclusion, combination of ethyl pyruvate, poloxamer 188 and berberine could be used to manage behavioral and biochemical alterations in HD than either of single drug therapy.

pallavi.1230@gmail.com