Passiflora incarnata mitigates the oxidative stress and neuroinflammation in case of pilocarpine-induced epilepsy model

Abdelaziz S. A. Abuelsaad
Beni-Suef University, Egypt

Background: Virulent epileptogenic insult is still one of the most life threatening during the clinical consequences and neurological emergencies of epilepsy. Furthermore, the use of anti-inflammatory drugs during this period is very controversial. Thus, the present study is designed to delineate the changes in the expression of neurotransmitters, imbalance in blood electrolytes; oxidative stress, levels pro-/anti-inflammatory cytokines, and after treatment with of pasipay (Passiflora incarnata).

Methods: The effect of oral administration of pasipay (P. incarnata) (200 mg/kg body weight) on pilocarpine-induced seizures was assessment. The correlation between seizure activity and levels of proinflammatory (IL-1<, IL-6, IL-17, TNF-< and TGF-<) and anti-inflammatory cytokines (IL-10 and IL-13), oxidative stress (lipid peroxidation, superoxide dismutase, catalase and glutathione reductase), enzymes, monoamines and neurotransmitters e.g Na+-K+-ATPase; creatinine kinase (CK), acetylcholinesterase, epinephrine and norepinephrine, L-DOPA, serotonin "(5-HT)", glutamate, aspartic acid, GABA and glycine; electrolytes e.g. Na+, K+, Ca+2 and Mg+2; and Th1 & Th2 lymophocyte activities (CD4+ and CD8+) were quantified. Whether P. incarnata supplementation modulated these impairment parameters or not, was also investigated.

Results: A very significant amelioration in amino acids, neurotransmitters, blood electrolytes, antioxidants and inflammatory cytokines in epileptic-treated rats with pasipay (P. incarnata). The multifunctional activities of P. incarnata as antioxidant, anti-inflammatory and antiepileptic modulator drug were discussed and correlated with other investigations.

Conclusion: In conclusion, natural products like pasipay (P. incarnata) could be combined with the highly repetitive drugs to minimize or prevent the side effects of antiepileptic drugs (AED). Moreover, present study supports further attempts to abrogate the neural dysfunction via antioxidant and anti-inflammatory cascade activities using P. incarnata.

Key Words: Epilepsy – Pilocarpine – Passiflora – inflammation – Cytokines – Neurotransmitters – oxidative stress.