

5th World Congress on Pharmaceutics & Drug Delivery

April 18th, 2022 | Webinar

Clinical Pharmacology & Biopharmaceutics

ISSN: 2167-065X

Neuroprotective effects of clenbuterol against experimentally -induced epileptic seizures in rats

*Sarah S. Abd El-Aziz, Muhammad Y.Al-Shorbagy, Samira S. Mustafa

University of Cairo, Egypt

Epilepsy is a neurological condition described by repeated unpredictable interruptions of normal brain function, named epileptic seizures. Oxidative stress, nitrosative stress, inflammation and apoptosis are considered as potential mechanisms underlying the pathogenesis of epilepsy. In this study, we used Levetiracetam (LEV) as a standard anti-epileptic treatment. Clenbuterol (CLEN), a lipophilic B₂-adrenoceptor agonist is a therapeutic drug for asthma and COPD. The possible neuroprotective actions of CLEN were investigated by unveiling its potential in preventing oxidative stress, inflammation and apoptosis compared to LEV. Rats were allocated into 4 groups. In the convulsive group, rats received a single i.p. injection of 3 mEq/kg lithium chloride 20 hours prior to a single i.p. injection of 150 mg/kg pilocarpine-hydrochloride. The control group received 3 mEq/kg lithium-chloride dissolved in normal saline. The third and fourth group, rats received i.p. 500 mg/kg LEV 30 minutes and 0.5 mg/kg CLEN for 7 days before lithium-pilocarpine (Li-PIL) administration respectively. Both drugs alleviated Li-PIL seizures and motor deficits, represented as open field parameters, in rats, which attributed to preservation of hippocampal reduced glutathione and decrease in total thiobarbituric acid reactive substances and nitric oxide contents. Furthermore, a reduction in tumor necrosis factor- α , interleukin-1B was observed.

Moreover, both drugs protected hippocampal neurons against apoptotic death assured by a decrease in caspase-3 and cytochrome-c levels. Collectively, our results suggest that CLEN might possess a promising therapeutic effect in Li-PIL -induced epileptic experimental model and other pathological aberrations in epilepsy via significant neuroprotective effects mediated by antioxidant, anti-inflammatory and anti-apoptotic effects.

Keywords-Clenbuterol, Epilepsy, Inflammation, Oxidative stress,

Biography

Sarah has completed her Master at the age of 27 years from Cairo University Faculty of Pharmacy. She is Assistant Lecturer at Faculty of Pharmacy Cairo University, Egypt & Ph.D. Candidate in [Pharmacology](#) and [Toxicology](#) Department. She is interested in investigating new approaches in the treatment of [epilepsy disease](#) and at the same time being safe and affordable therapies in a experimental scientific manner. She is looking forward a safe and effective [therapy](#) firstly tested on experimental animals in an ethical protocol through the facilitation offered by Faculty of Pharmacy Cairo University, Egypt. She is hoping for all epilepsy patients all over the world to be safely cured.

sara.elsayed@pharma.cu.edu.eg

Received: April 05, 2022; **Accepted:** April 08, 2022; **Published:** May 23, 2022