

Investigating the cardiovascular changes in rat model of lithium-pilocarpine induced spontaneous recurrent seizures

Supriya Sharma^{1*}, Arindam Ghosh Mazumder, Anil Kumar Rana, Vikram Patial and Damanpreet Singh

¹CSIR-Institute of Himalayan Bioresource Technology, India



Abstract

Background: Epilepsy is a chronic neurological condition that is mainly characterized by occurrence of spontaneous recurrent seizures. Study has also shown that temporal lobe seizure lead to development of ventricular fibrillation, shortening or prolongation of QT intervals, producing prolongation in the action potential, propensity to malignant tachyarrhythmia's thus risking cardiac damage.

Methods: The present study was envisaged to understand the cardiac changes during different phases of epileptogenesis and molecular changes in rat lithium-pilocarpine (Li-pilo) model of epilepsy. The animals were exposed to Li-pilo for induction of spontaneous recurrent seizures (SRS).

Findings: Latent means arterial pressure decreased as compared to the basal, whereas it was increased during initial and late SRS phases. Prolonged QTc interval was observed during late SRS as that of basal and latent phase. A significant increase in the serum level of lactate dehydrogenase and creatine kinase was observed in epileptic animals, along with hypertrophy, degenerative changes and fibrosis in heart sections.

Conclusion: The results concluded that Li-pilo-induced SRS leads to cardiac dysfunction via mTOR pathway upregulation, thus suggested the regulatory control of mTOR pathway as a potential target for SUDEP management.



cardiac damage. She has expertise in molecular biology and has established chronic epilepsy associated cardiac damage model in the lab.

Speaker Publications:

1. Scorza FA, Arida RM, Cysneiros RM, et al. "The brain-heart connection: implications for understanding sudden unexpected death in epilepsy". *Cardiol J* 2009; 16(5): 394-9.
2. Hernández G, Lal H, Fidalgo M, et al. "A novel cardioprotective p38-MAPK/mTOR pathway". *Exp Cell Res* 2011; 317(20): 2938-49.
3. Devinsky O, Spruill T, Thurman D, Friedman D. "Recognizing and preventing epilepsy-related mortality: A call for action". *Neurology* 2016; 86(8): 779-86.
4. Ravindran K, Powell KL, Todaro M, O'Brien TJ. "The pathophysiology of cardiac dysfunction in epilepsy". *Epilepsy Res* 2016; 127:19-29.
5. Mazumder AG, Sharma P, Patial V, Singh D. Ginkgo biloba L. "Attenuates spontaneous recurrent seizures and associated neurological conditions in lithium-pilocarpine rat model of temporal lobe epilepsy through inhibition of mammalian target of rapamycin pathway hyperactivation". *J Ethnopharmacol* 2017; 204: 8-17.

[29th World Congress on Neurology and Therapeutics;](#) London, UK- February 24-25, 2020.

Abstract Citation:

Supriya Sharma, investigating the cardiovascular changes in rat model of lithium-pilocarpine induced spontaneous recurrent seizures, *Neurology* 2020, 29th World Congress on Neurology and Therapeutics London, UK- February 24-25, 2020.

<https://www.neurologyconference.com/abstract/2020/investigating-the-cardiovascular-changes-in-rat-model-of-lithium-pilocarpine-induced-spontaneous-recurrent-seizures>

Biography:

Supriya Sharma is a senior Ph.D. scholar, working in the area of pharmacology, specifically in epilepsy and associated