

## **The protective effect of glycitin on pentylenetetrazole-induced seizures in male wistar rats**

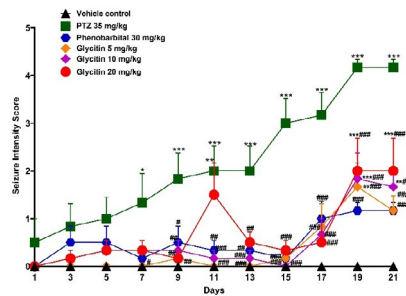
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**Introduction:** Epilepsy is a neurological disorder affecting millions of people and causes recurring seizures. Glycitin is a flavonoid found in soybeans and have various pharmacological properties, including anti-inflammatory, antioxidant and neuroprotective effects. However, the effects of glycitin on pentylenetetrazole (PTZ)-induced seizures in Wistar rats have not been extensively investigated. In this study, we investigated the potential anticonvulsant effect of glycitin in a rat model of PTZ-induced seizures.

**Materials and methods:** Adult Wistar rats were obtained from Shahid Beheshti Medical University. Rats were kept under constant conditions. PTZ and glycitin were purchased from Sigma, USA. A total of 36 male Wistar rats were divided into 6 groups with 6 rats in each group. The first group received saline only, while the second group received saline followed by PTZ (35 mg. kg<sup>-1</sup>) after 30 minutes. The third to six received phenobarbital (30 mg. kg<sup>-1</sup>) and glycitin (5, 10 and 20 mg. kg<sup>-1</sup>) respectively, followed by PTZ after 30 minutes. All injections were administered once every 48 hours for a duration of 21 days via intraperitoneal route. The severity of seizures was assessed using a score adapted from the Racine score, which ranges from 0 to 5. Seizures were recorded for a period of 30 minutes after PTZ injection.

**Results:** The analysis of seizure scores showed that the groups receiving glycitin had delayed and less severe seizures compared to the group receiving PTZ after saline. Specifically, the group receiving 5 mg. kg<sup>-1</sup> of glycitin showed the most significant reduction in seizure score compared to the PTZ group (p<0.001).

**Conclusion:** This study demonstrates that glycitin has anticonvulsant effects in a PTZ-induced seizure model in male Wistar rats. The delayed and less severe seizures observed in the groups receiving glycitin. Further studies are needed to determine the mechanisms underlying its anticonvulsant effects.



**Figure 1.** Effect of pretreatment with glycitin on epileptogenesis. The seizure scores were recorded after every injection of PTZ. Each administration was scored ranging from 0 to 5. glycitin has lower seizure score compared to PTZ group. All data were expressed as mean (n=6) ± SD. \*\*\*P < 0.001 represents a significant difference from the vehicle control group. (#) p < 0.05, (##) p < 0.01 and (###) p < 0.001 represents significant differences from the PTZ-treated group.

### Recent Publications:

1. Organization, W.H., et al., Atlas: epilepsy care in the world. 2005: World Health Organization.
2. Singh, A. and S. Trevick, The epidemiology of global epilepsy. *Neurologic clinics*, 2016. 34(4): p. 837-847.
3. Hu, Q.-p., et al., Genistein protects epilepsy-induced brain injury through regulating the JAK2/STAT3 and Keap1/Nrf2 signaling pathways in the developing rats. *European Journal of Pharmacology*, 2021. 912: p. 174620.5
4. Kazmi, Z., et al., Anti-epileptic activity of daidzin in PTZ-induced mice model by targeting oxidative stress and BDNF/VEGF signaling. *Neurotoxicology*, 2020. 79: p. 150-163.
5. Miadoková, E., Isoflavonoids—an overview of their biological activities and potential health benefits. *Interdisciplinary toxicology*, 2009. 2(4): p. 211.

### Biography

Saghi Hakimi Naeini was born in Iran in 1995. I am a Ph.D. candidate in Biological Sciences- Animal Physiology in the faculty of Life Sciences and Biotechnology at Shahid Beheshti University. I graduated with a bachelor's degree in Biological sciences in 2017 from the University of Shahid Beheshti and a master's degree in Biochemistry in 2020 from the University of Tarbiat Modares. I was the highest-ranked student among all B.Sc. and M.Sc. students and was admitted to postgraduate education (M.Sc. and Ph.D.) without taking the National Entrance Exam (quota of Exceptional Talents). In addition, I have been selected to use the facilities of National Elites Foundation since 2015. currently, as a Ph.D. candidate, I am the first ranked student and have done extensive studies in the field of Neuroscience and Neuroendocrinology. I am very interested in neurological disorders such as epilepsy and its treatment.

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