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Hasim, H.^a, Salam, S.K.N.M.^b, Rao, P.V.^{c d}, Muthuraju, S.^e, Muzaimi, M.^f, Asari, M.A.^g

Silver nanoparticles synthesized using Tualang honey ameliorate seizures, locomotor activity, and memory function in KA-induced status epilepticus in male rats

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^a Department of Chemical Pathology, School of Medical Sciences, Universiti Sains Malaysia, Health Campus, Kota Bharu, Kelantan, Kubang Kerian, 16150, Malaysia

^b Department of Basic Medical Sciences, Kulliyah of Medicine, International Islamic University Malaysia, Bandar Indera Mahkota, Pahang, Kuantan, 25200, Malaysia

^c Department of Biochemistry, Faculty of Medicine and Health Sciences, Abdurrah University, Jl Riau Ujung No. 73, Riau, Pekanbaru, 28292, Indonesia

^d Center for International Collaboration and Research, Reva University, Rukmini Knowledge Park, Kattigenahalli, Yelahanka, Karnataka, Bangalore, 560064, India

^e Department of Pharmacological and Pharmaceutical Sciences, College of Pharmacy, University of Houston, Houston, TX 77204, United States

^f Department of Neurosciences, School of Medical Sciences, Universiti Sains Malaysia, Health Campus, Kota Bharu, Kelantan, Kubang Kerian, 16150, Malaysia

^g Department of Anatomy, School of Medical Sciences, Universiti Sains Malaysia, Health Campus, Kota Bharu, Kelantan, Kubang Kerian, 16150, Malaysia

Abstract

Introduction: In recent years, green synthesis of silver nanoparticles using natural products has been increasingly utilized in the biomedical field as a therapeutic approach for managing neurodegenerative diseases. This study aimed to determine the effects of silver nanoparticles synthesized using Tualang honey (THSN) on seizure activity and locomotor and memory functions in rats after kainic acid (KA) induction. **Methods:** Male Sprague Dawley rats were randomly divided into six groups (n = 6/group), and each group was pre-treated orally with either distilled water or THSN (10 mg/kg or 50 mg/kg), according to their respective groups. Each rat was injected subcutaneously with KA (15 mg/kg) or saline after the last pre-treatment, and the onset of the first generalized seizure was recorded. After 24 hours and five days of KA induction, an open field test (OFT) and a novel object recognition test (NORT) were performed before they were sacrificed. **Results:** THSN pre-treatment of KA-induced status epilepticus groups demonstrated an increment in latencies to the onset of the first generalized seizure and the number of line crossings in OFT, with a higher recognition index of NORT compared to the untreated KA-induced status epilepticus group. **Conclusion:** THSN could have neuroprotective effects in ameliorating seizures, locomotor activity, and memory function after KA-induced status epilepticus in male rats. © 2022 BiomedPress. All rights reserved.

Author Keywords

kainic acid; locomotion; memory; neuroprotection; rat's model; seizures; silver nanoparticles; Tualang honey

Index Keywords

diazepam, kainic acid, silver nanoparticle; animal experiment, animal model, animal tissue, Article, behavior change, body weight, epileptic state, locomotion, male, memory, nonhuman, novel object recognition test, open field test, rat, recognition, seizure, Tualang honey

Chemicals/CAS

diazepam, 439-14-5, 11100-37-1, 53320-84-6; kainic acid, 487-79-6

Tradenames

DCR-SX44E, Sony

Manufacturers

Atlantic, ThailandSony

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Correspondence Address

Asari M.A.; Department of Anatomy, Health Campus, Kota Bharu, Kelantan, Malaysia; email: asnizam@usm.my

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