

Tualang honey-mediated silver nanoparticles attenuate hippocampal oxidative stress in kainic acid-induced male rats

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Abstract Introduction: Kainic acid (KA) has been widely used to study the mechanism of excitotoxicity-induced neurodegeneration and to investigate neurodegenerative therapeutic intervention. The present study aimed to investigate the protective effects of Tualang honey-mediated silver nanoparticles (THSN) against oxidative stress in the hippocampus of KA-induced rats. Methods: Male Sprague Dawley rats (n = 72) were randomized into six groups: i) control, ii) THSN 10 mg, iii) THSN 50 mg, iv) KA only, v) THSN 10 mg + KA, and vi) THSN 50 mg + KA. The animals were administered distilled water or THSN (10 or 50 mg/kg), according to their respective groups, five times at 12 h intervals before being injected subcutaneously with saline or KA (15 mg/kg). Animals were sacrificed after 24 h and 5 days of KA induction. Malondialdehyde (MDA), total nitrate/nitrite (NOx), protein carbonyl (PCO), glutathione (GSH), total antioxidant status (TAS), and catalase (CAT) activity in the hippocampal tissue were measured using commercially available ELISA kits. Results: THSN pre-treatments significantly improved oxidative status in the

hippocampus by decreasing the MDA, NOx, and PCO levels while increasing the levels of GSH, TAS, and CAT activity. Conclusion: THSN attenuated the KA-induced oxidative stress in the rat hippocampus through its antioxidant effects.



Keywords

Author Keywords: antioxidant; hippocampus; kainic acid; oxidative stress; protective effect; rats' model; silver nanoparticles; Tualang honey

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