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***Nigella sativa* and thymoquinone ameliorate memory impairment and neuro-inflammation in A β -induced rat model of Alzheimer's disease**

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Alzheimer's disease (AD) currently is one of the major healthcare issues worldwide. Unfortunately current therapies for Alzheimer's disease do not modify the course of disease. *Nigella sativa* and its active constituent Thymoquinone (TQ) may have anti-neuro-inflammatory actions. The aim of the present study was to investigate possible protective effects of *Nigella sativa* oil (NSO) and TQ on A β_{42} -induced AD models of rats. Intrahippocampal injection of A β_{42} peptide provides glial cell responses and causes neuro-inflammation. NSO and TQ were orally administered daily for 7 days before and for 10 days after bilateral intrahippocampal A β injection. To investigate whether NSO or TQ improve cognition, Passive Avoidance (PA) and Morris Water Maze (MWM) behavioral tests were performed 10 days later A β injection to assess learning and memory of rats. After the probe test the brain tissues were collected. Immunohistochemical staining with Iba1, GFAP and Caspase-3 antibody and ELISA analysis of TNF- α and IL-1 β levels on hippocampal tissue were performed. The oral treatment with NSO or TQ significantly reduced cognitive impairments in behavioral tests both MWM and PA. Immuno-staining results revealed that both NSO and TQ reduced microglial and astrocytic activation increased with A β injection. Measurements of pro-inflammatory cytokines in hippocampal tissue of A β -injected rats showed an elevation of TNF- α and IL-1 β levels. These changes were significantly reversed by NSO and TQ treatment. In conclusion results represent that NSO and TQ can improve A β -induced cognitive impairments by inhibiting neuro-inflammation. NSO and TQ recommended as a candidate for further investigation in treatment of AD.

Biography

Saliha Aysenur Cam has completed his Graduation from Hacettepe University, Faculty of Pharmacy. He is pursuing his PhD in Pharmacology Department at Ankara Yildirim Beyazit University. He currently works as a Lecturer at Ankara Yildirim Beyazit University. His primary area of interest is neuropharmacology.

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