Pharmacological Reports
2012, 64, 1105–1115
ISSN 1734-1140

Copyright © 2012
by Institute of Pharmacology
Polish Academy of Sciences

Potential role of licofelone, minocycline and their combination against chronic fatigue stress induced behavioral, biochemical and mitochondrial alterations in mice

Anil Kumar, Aditi Vashist, Puneet Kumar, Harikesh Kalonia, Jitendriya Mishra

Pharmacology Division, University Institute of Pharmaceutical Sciences, UGC Centre of Advanced Study (UGC-CAS), Panjab University, Chandigarh-160014, India

Correspondence: Anil Kumar, e-mail: kumaruips@yahoo.com

Abstract:
Background: Chronic fatigue stress (CFS) is a common complaint among general population. Persistent and debilitating fatigue severely impairs daily functioning and is usually accompanied by combination of several physical and psychiatric problems. It is now well established fact that oxidative stress and neuroinflammation are involved in the pathophysiology of chronic fatigue and related disorders. Targeting both COX (cyclooxygenase) and 5-LOX (lipoxygenase) pathways have been proposed to be involved in neuroprotective effect.
Methods: In the present study, mice were put on the running wheel apparatus for 6 min test session daily for 21 days, what produced fatigue like condition. The locomotor activity and anxiety like behavior were measured on 0, 8th, 15th and 22nd day. The brains were isolated on 22nd day immediately after the behavioral assessments for the estimation of oxidative stress parameters and mitochondrial enzyme complexes activity.
Results: Pre-treatment with licofelone (2.5, 5 and 10 mg/kg, *po*) and minocycline (50 and 100 mg/kg, *po*) for 21 days, significantly attenuated fatigue like behavior as compared to the control (rotating wheel activity test session, RWATS) group. Further, licofelone (5 and 10 mg/kg, *po*) and minocycline (50 and 100 mg/kg, *po*) drug treatments for 21 days significantly attenuated behavioral alterations, oxidative damage and restored mitochondrial enzyme complex activities (I, II, III and IV) as compared to control, whereas combination of licofelone (5 mg/kg) with minocycline (50 mg/kg) significantly potentiated their protective effect which was significant as compared to their effect *per se*.
Conclusion: The present study highlights the therapeutic potential of licofelone, minocycline and their combination against CFS in mice.

Key words:
chronic fatigue stress, licofelone, oxidative stress, RWATS