



Evaluation of The Neuroprotective Activity of 6-AF Mitigates Cd-Induced Oxidative Stress and Neurodegeneration in Mice

Waqar Ahmad Khan¹, Shahid Alishah¹, Lal Badshah², Shamsheer Khan³, Irfan Mateen⁴, Wu Jianping⁵,
Laura Astolfi⁶

¹Department of Chemistry Sarhad University of Science and Information Technology Hayatabad,
Peshawar, Pakistan

²Islamia College University Peshawar Pakistan

³Department Mechanical Engineering, UET, Peshawar, Pakistan

⁴Department of Anthropology University of Peshawar, Pakistan

⁵School of Chemistry Chemical Engineering and Life Science Wuhan University Technology China

⁶Department of Neurosciences University of Padua Bioacoustics Research Laboratory Biomedical

Campus Pietro d'Abano via G. Orus, 2b 35129 Padua Italy

Corresponding Email: waqarahmadkhan1990@gmail.com

Abstract—On the neurotoxicity that CD induces, research has been conducted globally. Because it has so many negative impacts on people, it is believed to be one of the primary target tissues. This study is the first to investigate the therapeutic potential of 6-AF to lessen cognitive impairment, neurodegeneration, and neuroinflammation brought on by CdCl₂. In the mice brain homogenates, our research shows that 6-AF significantly improved behavior as measured by the Morris Water Maze (MWM) and the Y-maze, and that this improvement was followed by an inhibition of Phospho C-Jun N Terminal Kinase (p-JNK) and its downstream signaling, including tumor necrosis factor-alpha (TNF-alpha) and Poly (ADP-ribose polymerase-1 (PARP-1) (NF-KB) proteins Moreover, 6-AF reduced the intensity of NRF-2 mature proteins mice subjected to the oxidative stress brought on by Cd. In summary, 6-AF is a useful neuroprotective medication for conditions producing neurodegeneration.

Keywords—6-AF, Phospho-JNK, CdCl₂, Neuron Inflammation, NRF-2