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Poster Presentation

Air Pollution's Triggering Role in Tau Protein Hyper Phosphorylation; A Sign of Alzheimer Disease

Hamed Delfaraz[1,2*], Zeinab Sadat Hoseini[1,2], Yasaman Behmanesh[1,2], Pouya Ghaderi[1,2]

[1]Student Research Committee, School of Medicine, Mashhad Islamic Azad University, Mashhad, Iran

[2]Mashhad Neuroscience Research Group, Mashhad, Iran

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Abstract

Nowadays, air pollution is one of the major problems in developed and developing countries. In recent years, effects of air pollution on neuroinflammatory diseases such as Alzheimer disease and Parkinson disease have been studied. Researches on polluted cities citizens indicate increasing in central nervous system (CNS) inflammatory factors in comparison with clean cities; also air pollution exposing, increases risk of developing Alzheimer disease by the percentage of 138%. This review is going to discuss about triggering role of air pollution components, special Diesel exhaust particles, in increasing inflammatory factors and Tau protein hyper phosphorylation. Studies indicate that increasing of these factors, has a direct relation with Tau protein hyper phosphorylation. Tau protein is one of the main components for microtubules shaping and association. Hyper phosphorylation of Tau protein is a reason of microtubules dissociation; this causes shape of neurofibrillary tangles (NFTs).These tangles develop neural and synaptic dysfunction, which are early Alzheimer's hallmarks. Air pollution components break tight junctions, pass the blood-brain barrier and penetrate into the central nervous system, influx of these substances create amoebic form of microglia and overactive it, also increase secretion of inflammatory cytokines like interleukin-1β (IL-1β), tumor necrosis factor-α(TNF- α) etc. Increasing of these inflammatory factors is one of the agents that cause Tau protein hyper phosphorylation by pathways such as CDK/P35. Although the air pollution abolition needs a comprehensive contribution, special from governments, a diet which contains anti-pro inflammatory cytokines as a primary prevention could be prescribed to suppress widespread complications that may occur for residents in coming years; diets that contain flavanols, gallic acid etc. are suitable; These are found abundantly in dark chocolates, teas etc.

Keywords: Air pollution, Alzheimer disease, Tau protein hyper phosphorylation, Neuroinflammation

Corresponding Author: Hamed Delfaraz

Email: *hameddelfaraz@yahoo.com*

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