

Title: Insights on Quercetin Therapeutic Potential for Neurodegenerative Diseases and its Nano-technological Perspectives

Author: Rajat Goyal, Garima Mittal, Suman Khurana, Neelam Malik, Vivek Kumar, Arti Soni, Hitesh Chopra, Mohammad Amjad Kamal

Abstract: The neurodegeneration process begins in conjunction with the aging of the neurons. It manifests in different parts of the brain as A β plaques, neurofibrillary tangles, Lewy bodies, Pick bodies, and other structures, which leads to progressive loss or death of neurons. Quercetin (QC) is a flavonoid compound found in fruits, tea, and other edible plants have antioxidant effects that have been studied from subcellular compartments to tissue levels in the brain. Also, quercetin has been reported to possess a neuroprotective role by decreasing oxidative stress-induced neuronal cell damage. The use of QC for neurodegenerative therapy, the existence of the blood-brain barrier (BBB) remains a significant barrier to improving the clinical effectiveness of the drug, so finding an innovative solution to develop simultaneous BBB-crossing ability of drugs for treating neurodegenerative disorders and improving neurological outcomes is crucial. The nanoparticle formulation of QC is considered beneficial and useful for its delivery through this route for the treatment of neurodegenerative diseases seems necessary. Increased QC accumulation in the brain tissue and more significant improvements in tissue and cellular levels are among the benefits of QC-involved nanostructures.

Keywords: Quercetin; Antioxidant; Blood-brain barrier; Nanoparticles; Nanotechnology; Neurodegenerative disorders.

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