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& Generic Drugs and Biosimilars

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Neuroprotection as an effective strategy in the therapeutics of neurodegenerative disorders

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Neurodegenerative disorders like Alzheimer's disease (AD) and Parkinson's disease (PD) are progressive in nature. Essentially there is a loss of neuronal activity in specific areas of brain. This can be attributed to oxidative stress mediated lipid peroxidation of neuronal cell membrane, abnormal misfolding and accumulation of certain proteins in the brain like α -synuclein, amyloid β or hyper phosphorylated TAU that leads to neuronal as well as synaptic dysfunction. This in-turn activates release of inflammatory mediators like TNF- α , bradykinin, Glial Fibrillary Acidic Protein (GFAP) etc. These inflammatory mediators further initiate neuronal cell degeneration compromising the functions of brain and continuing the disease progression. AD essentially manifests as dementia, loss of memory whereas PD manifests as tremors at rest, rigidity, bradykinesia and loss of coordinated movements. Currently available therapies for these degenerative disorders take care of the symptoms to certain extent. However, they are unable to treat the neurodegeneration or even halt the progression of the disease hampering the patient's quality of life. We at ICT (Institute of Chemical Technology) aim towards delaying the progressive nature of these disorders, by targeting the underlying pathophysiology causing neurodegeneration along with offering symptomatic relief. We identify phytoconstituents or existing drugs based on available scientific literature and screen them using biomarkers for neuroprotection. Biomarkers like Tyrosine Hydroxylase, α -synuclein and Mitochondrial complex I are explored for PD and Acetylcholine esterase, Choline acetyl transferase, Amyloid β , TAU protein, Mitochondrial complex IV for AD. Major biomarkers of our interest include molecules involved in inflammatory, oxidative, neurotrophic and apoptosis cascades for both AD/PD. We aim at identifying substances which would essentially offer neuro-protection and correlate the effect of these substances on explored biomarkers, with the behavioral parameters. This approach of tackling the progressive neurodegeneration, the prime cause of symptoms, will revolutionize therapeutics yielding better quality of life to AD/PD patients.

Biography

Sadhana Sathaye is an eminent Research Scientist working in the field of Pharmacology with an academic experience of 26 years. The overarching fields of her research encompass various neurological disorders like Epilepsy, Parkinson's and Alzheimer's disease with a clear vision of establishing novel therapeutic interventions by exploring herbs and modern medicinal drugs. She has over 64 national and international publications to her credentials and has been a renowned speaker in several esteemed national and international conferences. Her horizon is not limited to academia but expands to industry wherein she extends her services as a Consultant to the pharmaceutical industry in India.

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