

## **Brain aging in Parkinson's disease**

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Mounting evidence suggests that lifestyle factors, especially nutrition and exercise are essential factors for healthy ageing. However, as a result of the increase in life expectancy, neurodegenerative diseases (NDDs) like Alzheimer's and Parkinson's (AD and PD, respectively) are becoming an increasing burden, as aging is their main risk factor. PD is the second most common NDD, with a mean age of onset in the early-to-mid 60s. As with other NDDs, PD is nowadays recognized to be a heterogeneous multisystem disorder involving both environmental and genetic components. Common features include protein misfolding and aggregation, depletion of endogenous antioxidants, inflammation and oxidative-stress damage.

Solid evidence suggests that the pathophysiology of PD begin years, if not decades, prior to the onset of clinical symptoms, including memory impairment, motor disturbances and non-motor related abnormalities. Therefore, individuals at very early stages are the most likely to benefit from disease-modifying therapies should they become available. Neurologists recommend adoption of lifestyle-related factors and nutritional supplementation from initial stages of the disease to reduce PD progression rate and improve quality of life. In this respect, growing literature shows that regular exercise and physiotherapy in PD significantly improved both motor symptoms and cognitive functions and is routinely recommended for people with PD. Likewise, diets rich in conventional and functional foods such as omega-3 fatty acids, fish oil and coenzyme Q10 have been associated with lower risks of PD. More recently, interventions targeting gut microbiota, such as the supplementation of probiotics, are being considered a novel approach to PD.

Despite tremendous efforts in developing therapies targeting specific biochemical pathways linked to PD and the promising findings in preclinical animal studies showing neurorestoration and function, this has not translated into the clinical arena. In my presentation I will provide insights into the basis of brain degeneration in PD and new therapeutic strategies.

Dr Silvia Mandel is a pharmacologist and CNS expert with over 20 years of academic and industrial experience in medical research and development. She was the Vice Director of the Eve Topf Center for neurodegenerative diseases research and therapy at the Technion. Later she moved to Teva Pharmaceuticals where she served as a CNS project leader in Pharmacology and Head of the CNS in-vivo Laboratory. She was the Director of Pharmacology Dept at Salzman group, a boutique CRO for drug clinical development. Silvia is currently a preclinical consulting for biopharmaceutical development, active as a member of academic-industrial boards and a senior lecturer at the Technion and Galilee Faculties of Medicine.