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MICROBIOME-BASED NEUROPROTECTION: PROBIOTICS IN ALZHEIMER'S DISEASE (AD) AND PARKINSON'S DISEASE (PD)

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Parkinson's disease (PD) and Alzheimer's disease (AD) are major neurodegenerative disorders whose progression is influenced by gut microbiota, stress, and diet. This study evaluates the therapeutic effects of probiotics on cognition and neuroinflammation in AD and PD, and examines how microbiota-derived short-chain fatty acids (SCFAs) modulate immune, endocrine, and neuronal pathways. Probiotics enhance barrier integrity, regulate neurotransmission, improve metabolic and inflammatory markers, and counter HPA-axis hyperactivation, while SCFAs further support neuroprotection by modulating microglia, gut hormones, and neurotransmitter synthesis.