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Abstract book

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BEYOND THE BRAIN: THE HIDDEN ROLE OF CARDIORENAL DYSFUNCTION IN PARKINSON'S DISEASE

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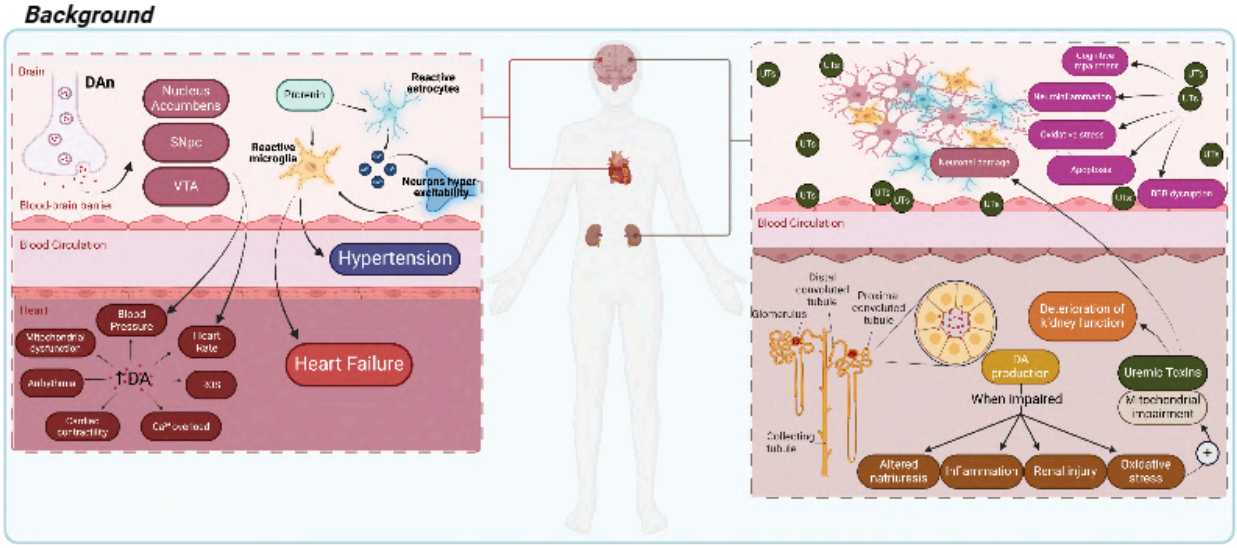
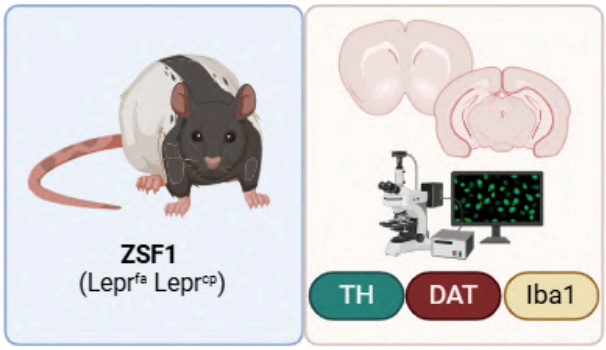
Parkinson's disease (PD) is the second most common neurodegenerative disorder, marked by the progressive loss of dopaminergic neurons in critical areas of the brain, particularly the striatum and substantia nigra. PD's complex nature suggests its interactions with various systemic health issues, particularly those affecting organs outside the central nervous system (CNS), which may increase the risk of developing PD and affect treatment outcomes. Research indicates that individuals with cardiovascular disease (CVD) and chronic kidney disease (CKD) face significantly higher risks of PD, even when controlling for shared risk factors. Notably, alpha-synuclein aggregations, a hallmark of PD, have also been found in the renal and cardiac tissues of patients with PD, CKD, and CVD, highlighting the interconnectedness of these systems. The Zucker fatty and spontaneously hypertensive (ZSF1) rats model metabolic syndrome, which includes kidney issues and heart failure. This study aimed to explore how the ZSF1 phenotype impacts the integrity of dopaminergic neurons and neuroinflammatory processes. Brain tissues from ZSF1 rats were analyzed through immunostaining with markers specific to dopaminergic and glial cells. The results showed a significant decrease in dopaminergic markers in the striatum and substantia nigra, indicating a potential link between cardiorenal dysfunction and neurodegenerative pathways. These findings suggest that systemic health conditions can directly influence PD pathology, emphasizing the complex interactions between the brain, heart, and kidneys, and presenting new opportunities for targeted PD therapies.

Keyword 1: Parkinson's disease
Keyword 2: Brain-heart-kidney axis
Keyword 3: Chronic kidney disease
Keyword 4: Cardiovascular diseases

Background



Methodology



Results