

Harnessing the anti-inflammatory potential of cannabinoid CB2 receptors for disease modification in Parkinson's disease

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Country

Ireland

Title of project or programme

Harnessing the anti-inflammatory potential of cannabinoid CB2 receptors for disease modification in Parkinson's disease

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Health Research Board

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4

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Research Abstract

The movement disorder associated with Parkinson's disease is caused by the slow degeneration of nigrostriatal dopamine neurons. One of the tragedies of this condition is that by the time a patient presents with initial symptoms, over half of their nigrostriatal neurons have already degenerated, and current symptomatic therapies can do nothing to prevent further cell loss. Therefore, a disease-modifying, neuroprotective therapy remains a vital but unmet need in

the treatment of this condition. In recent years, it has become increasingly evident that Parkinson's disease is associated with a self-sustaining cycle of neuroinflammation and neurodegeneration with dying neurons activating microglia, which, once activated, can release several factors which kill further neurons. One emerging pharmacological target that has the potential to break this cycle is the microglial CB2 receptor which, when activated, can suppress pro-inflammatory and enhance anti-inflammatory cytokine release from these cells, and reduce their neurotoxicity. Thus, the aim of this project is to determine if pharmacological activation of microglial CB2 receptors is sufficient to suppress neuroinflammation and mediate functional neuroprotection in rat models of Parkinson's disease. This will be assessed by chronic treatment of Parkinsonian rats with CB2 receptor agonists and/or antagonists followed by measurement of motor performance, nigrostriatal degeneration, neuroinflammation and CB2 receptor expression. If we find that pharmacological targeting of the CB2 receptor can reduce the neuropathological and behavioural features associated with Parkinsonian models, then we will have achieved our aim of establishing whether the CB2 receptor has the potential to be harnessed for disease modification in this neurodegenerative motor disorder.

Further information available at:

Types:

Investments < €500k

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Ireland

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