Synergistic Neuroprotective Mechanisms of Coffee Components in Parkinsons Diseas

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Country

USA

Title of project or programme

Synergistic Neuroprotective Mechanisms of Coffee Components in Parkinsons Diseas

Source of funding information

NIH (NINDS)

Total sum awarded (Euro)

€ 2,003,853.21

Start date of award

30/09/2012

Total duration of award in years

1

The project/programme is most relevant to:

Parkinson's disease & PD-related disorders

Keywords

Coffee, Caffeine, Protein phosphatase, Parkinson Disease, alpha synuclein

Research Abstract
DESCRIPTION (provided by applicant): Coffee is by far the most widely and highly consumed herbal extract. Numerous epidemiological studies indicate that coffee consumption affords

reduced risk of Parkinson's disease (PD). This association has been attributed to caffeine, but coffee is much more than just caffeine and the finding that caffeine may be neuroprotective in no way obviates the possibility that other components in coffee may play a synergistic role with caffeine. We have recently isolated a lipid-like component of coffee, EHT, and found it to have a protective effect in mouse models of PD. Biochemical and neuropathological analyses demonstrate that dietary supplementation with EHT leads to decreased ?-synuclein phosphorylation and aggregation, a robust anti-inflammatory effect, and protection against oxidative stress. Studies indicate that the actions of caffeine stem from its antagonism of adenosine A2A receptor signaling, but downstream neuroprotective mechanisms remain to be established. The proposed research will elucidate the molecular mechanisms of neuroprotection mediated by caffeine and EHT as well as their synergy through in vitro biochemical analyses, cell based molecular experiments and in vivo studies in mouse models of PD. The ultimate goal of this work is to develop a dietary supplement(s) or medical food that would slow the progression or prevent the development of neurodegenerative disorders such as PD.

Lay Summary
Coffee, which by far is the most widely and highly consumed herbal extract worldwide, has been linked to reduced risk of developing Parkinson's disease. While this effect has been attributed largely to caffeine, coffee has many more components than just caffeine. This project focuses on understanding the mechanisms by which certain coffee constituents protect brain cells. The ultimate goal of this work is to develop a dietary supplement(s) that would slow the progression or prevent the development of neurodegenerative disorders including Parkinson's disease.

Further information available at:

Types:
Investments > €500k

Member States:
United States of America

Diseases:
Parkinson's disease & PD-related disorders

Years:
2016

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