

NEURODIET

Molecular Mechanisms of Dietary Intervention on Neurodegeneration (NEURODIET)

Despite the significant progress in understanding disease mechanisms of neurodegeneration, no cure is available to date. Dietary interventions, however, have a remarkable potential to improve symptoms without risk for patients. Therefore, there is a need to understand the pathways through which dietary interventions alleviate neuropathology and robustly improve motor performance in e.g. animal models. Within NEURODIET, experienced researchers in neurodegenerative disorders unite with a nutrition expert to fill this important knowledge gap and precisely elucidate the molecular events triggered by dietary interventions reported to improve symptoms related to neurodegenerative disorders.

The partners of NEURODIET selected Spinocerebellar ataxia type 3 / Machado-Joseph disease (SCA3/MJD) as the ideal disease model to examine this question. SCA3/MJD is the most common autosomal dominantly inherited ataxia disorder worldwide. It is caused by the expansion of a polyglutamine-encoding CAG repeat in the ATXN3 gene and currently has no effective disease-modifying treatment. NEURODIET will profit from the defined genetic disease etiology, from the availability of highly suitable animal models, and from the well-characterized neurodegenerative disease-related molecular processes in SCA3.

NEURODIET aims to investigate the precise molecular mechanisms by which certain well-established dietary interventions can prevent, delay or halt the progression of neurodegenerative disorders. Moreover, NEURODIET will specify evidence-based nutritional recommendations for patients and improve targeted intervention in neurodegenerative and related disorders. By using cutting-edge methodologies, NEURODIET will perform a categorical analysis of the impact of three different dietary approaches in cellular pathways relevant for neurodegenerative disorders such as glucose metabolism, transcriptional dysregulation, impaired proteolytic cleavage, aggregation, and protein clearance.

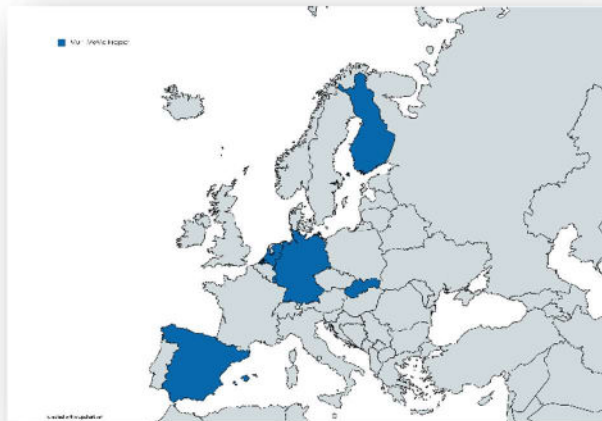
NEURODIET will overcome possible shortcomings of many comparable approaches, and by using the three most relevant dietary regimes, by employing the three most relevant mouse models for SCA3 and by combining highly sophisticated analytical strategies, we will strongly increase the likelihood that our findings are of relevance not only for SCA3 but for neurodegenerative disorders in general.

Total Funding : 774 K€

Duration : 3 years

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