Research project by
Dr Rossana Rosa Porto

Dementia Australia
Research Foundation

Treat

Investigating sauna use as an Alzheimer's disease treatment

What is the focus of the research?

Understanding how regular sauna use may improve disease pathology and behaviour impairments in Alzheimer's disease.

Why is this important?

Recent research has found an association between regular sauna use and reduced risk of Alzheimer's disease.

'Heat shock', as it's called in the scientific world, has beneficial effects in other chronic diseases too, including cardiovascular disease, diabetes, obesity and depression. Better still, there are no significant side effects, unlike current pharmacological treatments for Alzheimer's disease, which offer little symptom improvement.

In this project, Dr Porto will investigate the underlying mechanisms of how warming the body improves brain and behavioural changes associated with early- and late-stage Alzheimer's disease.

This research will also evaluate any differences between sexes. Alzheimer's disease is more common in women and dementia is the leading cause of death in Australian women. Unfortunately, they are commonly misdiagnosed and underrepresented in neuroscience research.

By identifying how heat shock therapy may reduce the risk of Alzheimer's disease, this project will open new avenues for earlier diagnosis and sauna-like treatments that may prevent disease progression.

How will it happen?

Stage 1: mice genetically engineered to have Alzheimer's disease characteristics will be divided into groups depending on their genetics, age and sex. Groups will either be a control (no treatment) or receive sauna-like therapy twice a week for two months. Changes in their body temperature and behaviour will be monitored.

Stage 2: mice will undergo a series of behavioural tests, then their brain tissue and plasma will be harvested for further analysis.

Stage 3: using state-of-the-art techniques, analyse specific brain regions and plasma to determine the treatment's effects on inflammation and the build-up of Alzheimer's disease-related proteins.

What could this mean for dementia research?

- Potential for new non-pharmacological treatments.
- New understanding of how female biology responds to sauna treatment.
- Strategies that reduce disease risk and slow its progression.

Who's undertaking the research?

Dr Rossana Rosa Porto, Western Sydney University

Dr Porto is a post-doctoral research fellow at the Laboratory of Behavioural Neuroscience within the School of Medicine at Western Sydney University. She has a background in metabolic and neurodegenerative diseases and expertise in non-pharmacological treatments, including exercise and heat shock therapy.

Prior to commencing at Western Sydney University in 2019, Dr Porto conducted research at the Federal University of Rio Grande do Sul – Brazil (UFRGS) and The University of Sydney, investigating the role of heat shock proteins in a variety of subjects, including learning and memory, brain metabolism and inflammation.

The title of Dr Porto's project is *From basal forebrain to default mode network: does glymphatic dysfunction contribute to the initial amyloid-β deposition in Alzheimer's disease?*