



Naturally occurring compounds to fight Alzheimer's Disease

Project Title

Identification of neuroprotectants from terrestrial and marine plant extracts in neurodegenerative disorders of the amyloid type: NEUROAMYLOID

Project Coordinator

Dr Neville Vassallo
Department of
Physiology &
Biochemistry
University of Malta

Project Partners

Department of
Pathology
University of Malta

Institute of Cellular
Pharmacology

Amyloidogenic diseases, including Alzheimer's disease, Parkinson's disease, Huntington's disease and prion diseases are major neurological conditions with an increasing prevalence rate in the general population. These disorders are characterized by misfolding, aggregation and accumulation of toxic amyloid peptides inside or outside cells.

A unifying characteristic of these molecules is that they bind to target membranes and assemble into multimeric, membrane-spanning pores, a process that leads to cellular damage and death. The fact that such a diverse group of diseases have a similar structural origin strongly indicates that a common therapy might be possible. Consequently, strategies based on purging formation of toxic amyloid peptides have gained in importance. Published data is consistent with the idea that all model anti-amyloid strategies are superior when initiated long before onset of amyloidosis. Indeed, interventional strategies early in life should not only prevent amyloid pathology, but also take advantage of the regenerative

capacity of the human brain at younger ages.

Plants and plant cells can synthesise complex metabolites that represent a vast resource of chemical diversity. These complex metabolites are generally low-volume/high added value products such as pharmaceuticals, food and beverage supplements, cosmetics, perfumes and others. The project aims to use robust molecular screens to identify novel bioactive compounds from terrestrial and marine plants that would be able to inhibit and/or destabilise clumping by amyloid proteins. The most promising drugs will be tested directly on neuronal cultures. Bioactive plant compounds can be marketed as food supplements or used as nutraceuticals and even pharmaceuticals, intended for the chemoprevention of these late-life degenerative disorders.