

## Identification of new sustainable biomolecules with anti-aging and neuroprotective effects

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### Abstract:

Aging is a multifactorial physiological condition mediated by different biological pathways, which influence lifespan and play an essential role in the pathogenesis and evolution of age-related diseases. The development of age-related diseases is also influenced by environmental factors and, according to the One Health concept, human health is closely connected with animal and environmental health. Indeed, following the bioprospecting research approach, the biodiversity well-being allows to identify a variety of biocompounds with bioactivities and beneficial effects for the prevention (or treatment) of human diseases.

Among these, Parkinson's disease (PD) is a neurodegenerative disorder that affects 10 million people worldwide and is associated with  $\alpha$ -synuclein misfolding.

Here, with the help of a phylogenetic analysis which investigates plants relationship based on their bioactivities, we analyze different Italian plant extracts to identify bioactive molecules with anti-aging effects on a *S. cerevisiae* PD model overexpressing human  $\alpha$ -synuclein.

These beneficial effects may include an increase of cell growth, an increase of lifespans, and a reduction of ROS levels. Moreover, these extracts are under investigation to understand the molecular mechanisms linked with a reduced aging process, especially focusing on  $\alpha$ -synuclein toxicity and its aggregation.

This project will lead to the identification of new bioactive extracts or compounds with anti-aging and anti-aggregation effects, which can play a new beneficial and sustainable role for the prevention of neurodegenerative diseases.

At last, the discovery of biomolecules with anti-aging effects in Italian plants will give a different and increased value to our vegetal biodiversity, supporting the idea of global health and to take care to environmental well being, which strongly affects the human health.

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