TROUGAKOS LAB
Group of 'Aging and Age-related Diseases'

"Anti-Aging": Exploitation of Greek microbial diversity for the development of innovative cosmeceuticals and food supplements

HSBMB

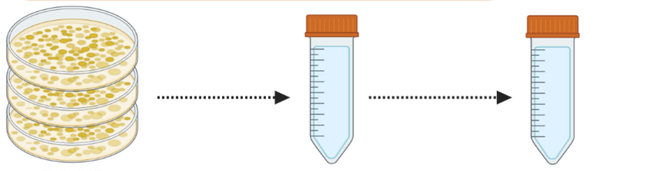
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Overview

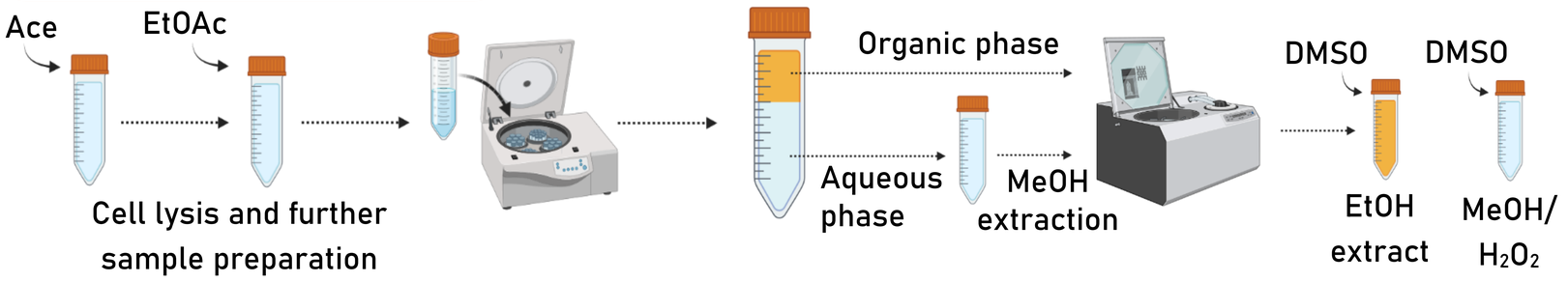
Greek ecosystems are a fertile yet under-explored ground for the study of Actinobacteria - known producers of bioactive compounds. By exploring this under-investigated biodiversity and chemodiversity of Greek actinobacterial strains (mostly of the genus *Streptomyces*), the "AntiAging" project aims to uncover potentially novel natural compounds with anti-aging activity that can be formulated as cosmeceutical and nutraceutical products. A customized *in-house* library of 2000 extracts was generated, all of which were investigated for potential anti-aging properties. This biological evaluation was performed though elastase (anti-aging activity) and tyrosinase (whitening activity) inhibition *in vitro* assays.

Materials and Methods (A)



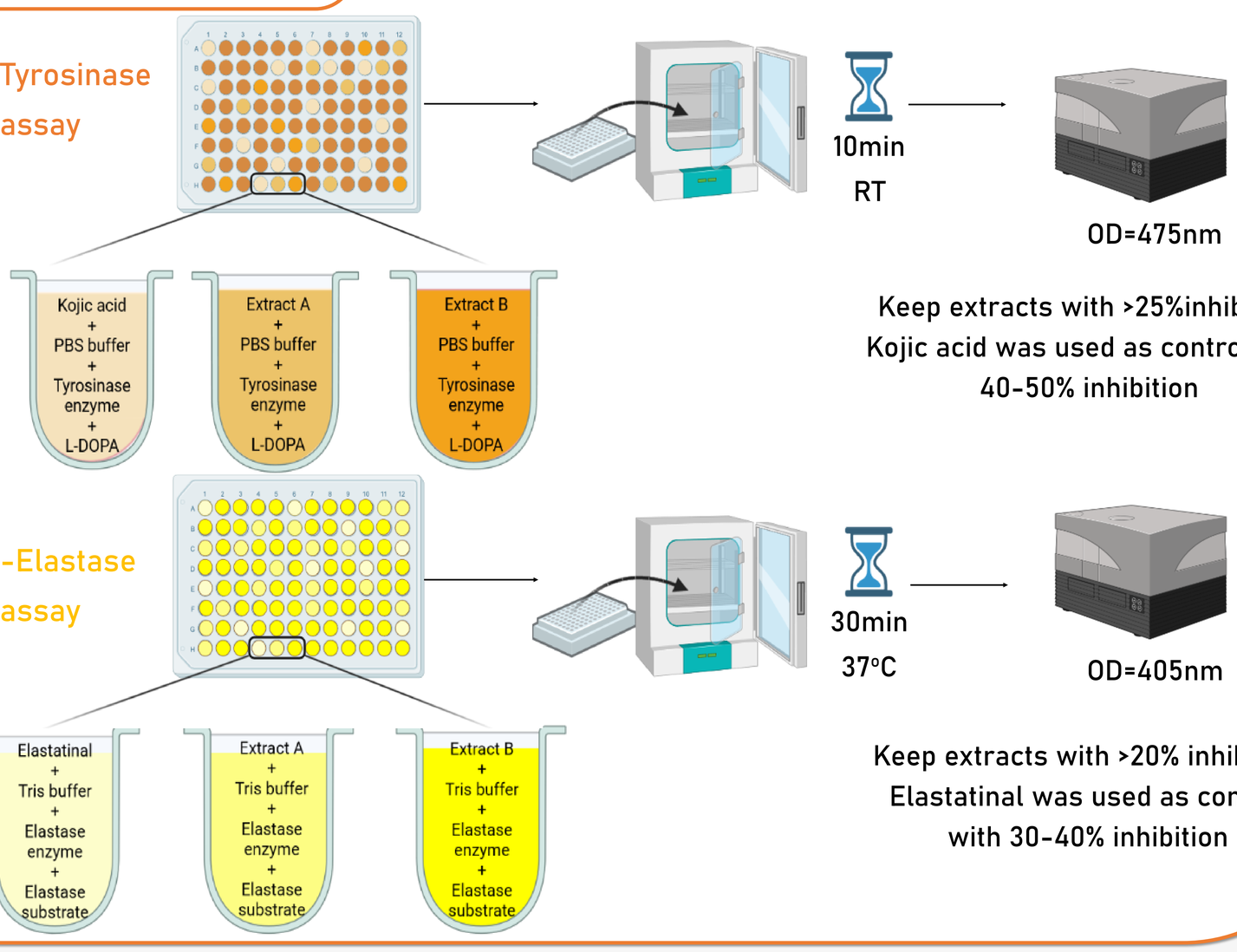
In house library of 2000 extracts:
- 1000 EtOH extracts
- 1000 MeOH/H_2O_2 extracts

Materials and Methods (B)



Materials and Methods (C)

Anti-Tyrosinase assay



Keep extracts with >25%inhibition
Kojic acid was used as control with 40-50% inhibition

Anti-Elastase assay

Keep extracts with >20% inhibition
Elastatinal was used as control with 30-40% inhibition

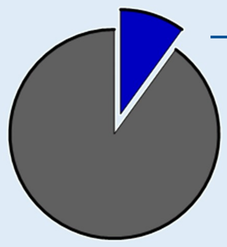
Workflow

A Isolation of Actinobacteria from Greek ecosystems
+
Microscale cultivation

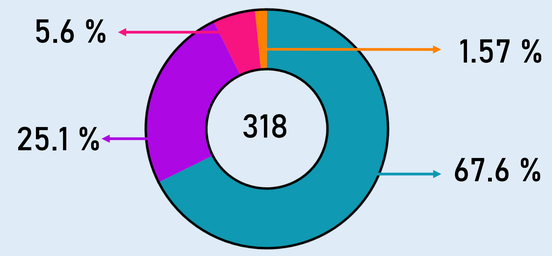
B Development of extraction protocol
+
Extraction of actinobacterial cultures
+
Creation of extract library

C Enzymatic and cell based bioassays
+
In vivo anti-aging testing in a *Drosophila melanogaster* model

Results

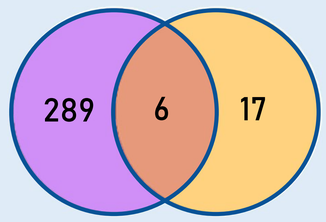


318 of 2031 [15,6%] extracts exhibit over 25% tyrosinase and/or elastase inhibition activity in enzymatic assays



- 25%-50% tyrosinase inhibition [215]
- >50% tyrosinase inhibition [80]
- 20%-50% elastase inhibition [18]
- >50% elastase inhibition [5]

6 extracts with both elastase and tyrosinase inhibition



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