# Natural Cosmetics International Meeting




## *Book of Abstracts*

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# Poster presentations

## P58: Exploiting the Greek microbial diversity for the discovery of novel anti-ageing molecules with applications in cosmeceuticals

Gkogkou E.[1], Gianniou D.D.[1], Theodosopoulou A.[1], Gaitanis K.[2], Tsafantakis N.[2], Kaili S.[3], Laskaris P.[3], Tsiokanos E.[2], Fokialakis N.[2], Hatzinikolaou D.G.[3], Karagouni A.D.[3], Trougakos I.P.[1]

*[1] Section of Cell Biology and Biophysics, Department of Biology, National and Kapodistrian University of Athens, Panepistimiopolis Zografou 15784, Athens, Greece*
*[2] Section of Pharmacognosy an Chemistry of Natural Products, Department of Pharmacy, National and Kapodistrian University of Athens, Panepistimiopolis Zografou 15771, Athens, Greece*
*[3] Section of Botany, Department of Biology, National and Kapodistrian University of Athens, Panepistimiopolis Zografou 15784, Athens, Greece*
*E-mail address: itrougakos@biol.uoa.gr*

Greek ecosystems are a fertile yet under-explored ground for the study of Actinobacteria which are known producers of bioactive compounds. By exploring the under-investigated biodiversity and chemodiversity of Greek actinobacterial strains (mostly of *Streptomyces* sp.) the "Anti-Aging" project aims to discover novel natural products (NPs) that can be formulated as cosmeceuticals. In total, 3000 isolates belonging to the National and Kapodistrian University of Athens (NKUA), Greece, bacterial and Archaea Culture Collection (ATHUBA; some originating from unique environments such as caverns, volcanoes, thermal springs, etc.) were studied. A customized *in-house* library of 2000 extracts was generated (EtOAc and MeOH/$H_2O$) all of which were investigated for potential bioactivity. Biological evaluation was initially performed though elastase (anti-ageing activity) and tyrosinase (whitening activity) inhibition cell-free assays. A small number of extracts demonstrated >50% elastase inhibitory activity, whereas a considerably larger number exhibited >50% tyrosinase inhibitory action; in some cases, the bioactivity exceeded 80% inhibition at cell-free assays. Of the top 100 extracts showing the highest inhibitory activity, 30 were found to be non-cytotoxic when tested on cell-based assays. The biological properties of the non-cytotoxic extracts were tested at human diploid fibroblasts (BJ cells) for their anti-ageing activity and on melanocytes (B16F10 cells) for their whitening activity. The most promising isolates were subjected to a scale-up process (2L) and fractionation (~120 fractions) and their bioactivity for elastase and/or tyrosinase inhibition was reassessed; finally the most active fractions were used for compound identification and isolation. Our promising results reveal a hidden yet powerful potential of harnessing Greek microbial wealth in the context of anti-ageing.

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