Streptomycetes as a source of novel antimicrobial and antiaging products

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The genus *Streptomyces* consists of filamentous Gram-positive bacteria found mainly in soil that contain an average of 30 secondary metabolite biosynthetic gene clusters and which are responsible for the production of nearly 80% of bioactive molecules. This makes investigating streptomycetes for the production of novel secondary metabolites that can serve as novel antimicrobial or antiaging compounds of great interest.

Our culture collection contains over 1000 streptomycete isolates originating from a wide variety of Greek locations and biomes, the majority of which have never been studied. For this reason, we decided to screen them for antimicrobial activity using a cross plate methodology involving the growing of streptomycetes on an agar plate in the presence of two Gram positive bacteria, two Gram negative bacteria and two saccharomycete fungi selected based on their frequent use as indicator strains. Of the currently examined streptomyetes 45% showed inhibitory activity against Gram positive bacteria, 33% against Gram negative bacteria and 28% against saccharomycete fungi. The most promising of these streptomycete strains will have their active compounds extracted and isolated in order to determine whether they are novel compounds.

In addition, secondary metabolites will be extracted from solid cultures in order to evaluate their antiaging activity. Extracts will be screened *in vitro* and in cell-based assays for their antioxidant activity and their inhibitory activity against the elastase (anti-wrinkle) and tyrosinase (whitening activity) enzymes, as well as their ability to activate known anti-aging pathways such as proteasome and autophagy.

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