
Marine sponges from Indian Ocean, a highly promising source for the discovery of novel bioactive compounds to fight against ageing and age-related diseases

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Abstract

Ageing is commonly defined as the accumulation of diverse deleterious changes occurring in cells and tissues with advancing age that are responsible for the increased risk of pathologies such as Alzheimer's disease, cardiovascular diseases, neurodegeneration or cancers. As the population of developed countries is ageing, the prevalence of a variety of age-related diseases is increasing. In order to counteract this major healthcare challenge, marine natural products represent an extraordinary reservoir of structurally diverse bioactive metabolites which may present anti-ageing properties and offer pharmaceutical, cosmeceutical or nutraceutical applications. Taking into consideration the aforementioned issues, the H2020 European project TASC MAR explores marine invertebrates and symbionts from under-investigated marine biodiversity hotspots and develops innovative approaches for the discovery and production of compounds with anti-ageing activity. The Chemistry Laboratory of Natural Substances and Food Sciences (LCSNSA, University of La Réunion) located at Réunion island is involved in this ambitious research program and this communication will therefore provide an outline of its contribution to TASC MAR. We collected a total of 112 sponges from Mayotte and Rodrigues (Indian Ocean). The crude extracts of the samples

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were submitted to a biological evaluation against a wide range of different targets involved in ageing or age-related diseases. These targets include catalase, sirtuin 1, CDK7, proteasome, Fyn kinase, tyrosinase and elastase. Twenty nine crude extracts have shown promising results. The chemical investigation of these 29 extracts for the discovery of molecules with anti-ageing effects will be discussed.

Keywords: age related diseases, anti ageing activity, marine sponges, novel bioactive compounds, TASCMAR