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SCREENING AND DEREPLICATION OF MICROBIAL NATURAL PRODUCTS EXTRACTS

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Cosmopolitan occurrence of a lot of antibiotics and other bioactives among microorganisms, stresses the need for efficient of dynamic screening and dereplication methods to avoid redundancy in isolation of compounds. Exploring our large collection of marine bacteria collected during the Galathea 3 expedition,¹ we use a combination of chemical profiling² and explorative solid-phase extraction (E-SPE)³ to assess the bacteria’s potential to produce new and interesting molecules. We found the use of chemical profiling by LC-UV/MS very useful for marine bacteria such as Vibrio⁴ and Pseudoalteromonas.⁵ It enabled the grouping of similar strains at species and subspecies level disregarding geographical sampling locations. However, intraspecies differences were still observed. In P. luteoviolacea⁵ and V. coralliilyticus⁶ some of the differences were related to the production of antibacterial compounds. The chemical profile could be linked to a bioactivity profile using E-SPE,³ which through the use of three different ion-exchangers and a size-exclusion column gives information about the charge, size, and polarity of active components in an extract. This can be used to discriminate between possible candidates during dereplication and allows detailed mapping of bioactives.