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Marine *Vibrionaceae* as a source of bioactive natural products

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Vibrionaceae are Gram-negative bacteria found widespread in the marine environment where they are particularly abundant on the surface of marine macroorganisms. Production of antibacterial compounds appears to be common among vibrios, yet vibrios are largely underexplored for their proclivity to produce secondary metabolites.

We have studied the production of antibacterial compounds in *Vibrionaceae* collected during a global marine expedition, Galathea 3. Apart from growth inhibitory compounds, we searched for compounds that interfere with virulence regulation in *Staphylococcus aureus*.

We found that some strains were capable of producing antibacterial compounds when grown on natural substrates such as chitin or seaweed. One *Vibrio coralliilyticus* strain was capable of producing the antibacterial compound when using chitin as the sole carbon source and in a live chitin model system, suggesting an ecological function.

Using chemical profiling, vibrio strains were compared on a global scale, revealing that the production of certain compounds is a conserved feature independent of sample locations. Chemical screening techniques such as explorative solid-phase extraction led to the isolation of two novel depsipeptides, solonamide A and B, as potent inhibitors of the *agr* QS system involved in virulence expression in *S. aureus*. Of special interest was a pronounced effect against a highly virulent, CA-MRSA strain (USA300).

In conclusion, we found that vibrios are competent producers of secondary metabolites, some of which possess biological activities attractive for alternative strategies in antibacterial therapy.