

## Mimicking Seawater For Culturing Marine Bacteria - DTU Orbit (08/11/2017)

### Mimicking Seawater For Culturing Marine Bacteria

Only about 1% of marine bacteria have been brought into culture using traditional techniques. The purpose of this study was to investigate if mimicking the natural bacterial environment can increase culturability. We used marine substrates containing defined algal polymers or gellan gum as solidifying agents, and enumerated bacteria from seawater and algal exudates. We tested if culturability could be influenced by addition of quorum sensing signals (AHLs). All plates were incubated at 15°C. Bacterial counts (CFU/g) from algal exudates from brown algae were highest on media containing algal polymers. In general, bacteria isolated from algal exudates preferred more rich media than bacteria isolated from seawater. Overall, culturability ranged from 0.01 to 0.8% as compared to total cell count. Substitution of agar with gellan gum increased the culturability of seawater bacteria approximately 100-fold; from  $8.5 \times 10^1$  CFU/ml to  $5.2 \times 10^3$  CFU/ml, whereas addition of AHLs did not improve culturability on any of the media. The substitution of agar with gellan gum shows great promise for increasing culturability of marine bacteria, and further studies are ongoing. The AHLs used in this study were selected based on a previous study determining the most common AHLs produced by marine strains of the Vibrionaceae family. However, their effect on culturability could not be fully explained, so also here further studies are being carried out.

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