MARINE SPONGE GRAFTING ON CONCRETE FOR MARINE BIOREMEDIATION

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Résumé

Marine pollution and the spread of invasive alien species are largely responsible for the collapse of biodiversity and associated ecosystem services. Along coastal areas, marinas and commercial ports concentrate this chemical and biological contamination. In order to remedy this situation, our project consists in designing and installing new bioactive materials at intra-port level, facilitating the development of bioremediating native species while limiting the development of non-indigenous species.

Our *in vitro* study compares the cell adhesion of the bioremediating marine sponge *Hymeniacidon perlevis* to a low pH concrete coating *versus* Portland concrete. In parallel, the adhesion capacities of the invasive Chinese sponge *Celtodoryx ciocalyptoides* are also tested on these same concretes. Briefly, the cell adhesion test involves dissociating marine sponge cells, staining them with neutral red and then allowing them to adhere for 24 h in 12-well plates half-filled with concrete. After washing, the live and adhered cells are destained and an OD reading is taken at 540 nm using a spectrophotometer (Figure 1). The influence of bacterial biofilm on sponge cell adhesion is also being evaluated.
In the short term, artificial modules designed by 3D printing and previously bioactivated in vitro by cells from the sponge *H. perlevis* will be installed in the intertidal zone of the port of La Trinité-sur-Mer (Morbihan, France) to monitor in situ the development of the bioremediating species.

Mots-Clés: bioremediation, marine sponge, artificial reef, non, indigenous species

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