

Combined effects of ocean acidification and metals on sea urchin larval development

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We live in a multi-stressor world where oceans are impacted by both global (e.g. CO₂-driven climate change and ocean acidification) and local pressures. Coastal marine organisms are already challenged by anthropogenic stressors such as pollutants, that may magnify the impacts of future global changes. For instance, ocean acidification is likely to change metal speciation as well as bioaccumulation and, consequently, metal toxicity. There is few information available on the effects of these interactions on marine biota. In this study, we determine the effect of ocean acidification on the incorporation kinetics of six trace metals and one radionuclide (Mn, Co, Zn, Se, Ag, Cd, ²⁴¹Am) in the larvae. The radiolabelled metals and radionuclide added in trace concentrations allowed fine tracing of the incorporation in larvae exposed to six different pH conditions (from control 8.1 down to -1.1 pH units) during the first 74 hours of development. Additionally, we provide insight on the combined effects of ocean acidification and cadmium on the larval development of the sea urchin.