Advanced bio composites for delivering curcumin and mitigating coral bleaching

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In the last years, wide and intense coral bleaching events are more frequent. So far, the current mitigation techniques are not effective and scalable, and innovative approaches are required. Here, we present a new strategy for mitigating coral bleaching by targeting the leading cause of this phenomenon. Indeed, during these events, the symbiotic relationship between the polyps and the algae present inside the coral is interrupted, causing the release of the symbionts and consequent loss of the color (bleaching). The leading cause of this event has been found in the increasing number of Reactive Oxygen Species (ROS). In human beings, high levels of ROS are the causes of several diseases and pathological conditions, and among the standard therapies, there is the use of natural antioxidants. Therefore, in this presentation, we will show how to combine knowledge of marine science, pharmaceutics, and materials science to produce advanced biodegradable bio composites to deliver antioxidants during induced thermal-stress bleaching events in corals. This work is the result of a strict collaboration between the University of Milan-Bicocca, the Marine Research and High Education Center (MaRHE) in the Maldives, and Istituto Italiano di Tecnologia (IIT) of Genoa.