Using Aiptasia for Heavy Metal Decontamination of Oahu's South Shores

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Heavy metal contamination in coastal ecosystems, such as the southern shores of Oahu, poses critical ecological risks. This study explores the potential of Aiptasia anemones for bioremediation, given their resilience and metal-binding capabilities through metallothioneins (MTs). Using controlled experiments with seawater from Magic Island, contaminated with lead beyond EPA safety limits, the Aiptasia's ability was assessed to absorb and reduce lead levels. Water samples collected bi-daily over 21 days were analyzed with Inductively Coupled Plasma Mass Spectrometry (ICP-MS), revealing a notable reduction in lead concentration in tanks containing Aiptasia. These findings suggest Aiptasia effectively sequesters lead through MTs and reactive oxygen species (ROS) mitigation. Control tanks showed rising heavy metal levels, underscoring the absence of bioremediation. This study positions Aiptasia as a feasible, sustainable solution for reducing heavy metals in urban marine environments. Further testing in diverse conditions could validate its role in ecologically friendly coastal remediation strategies.

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