Combating Jellyfish Blight: A Novel Usage of Chondroitin Sulfate within Trashed Jellyfish to Adsorb Heavy Metal Pollutants

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Chondroitin sulfate is one branch of glycosaminoglycan that forms proteoglycans within the connective tissue of jellyfish. However, few studies are done on the source jellyfish for extraction and utilization of chondroitin sulfate. In this project, chondroitin sulfate extracted from the jellyfish Aurelia aurita was tested in vitro and confirmed for the first time to remove aqueous hexavalent chromium, arsenic, cadmium, lead and mercury. This allows double purification in which the jellyfish that originally polluted water through mass dumping is used again to adsorb heavy metal pollutants. The phenomenon of jellyfish chondroitin sulfate adsorbing heavy metal pollutant was conducted in batch method, and the quantity of adsorbed heavy metal (represented as qe) was measured by Inductively Coupled Plasma Mass Spectrometry. This paper confirms that heavy metal removal by jellyfish CS (chondroitin sulfate) fit the kinetics equation and adsorption isotherm. As the mass jellyfish population calls for an effective disposal, the use of jellyfish CS for water purification is an ideal solution to a growing social and ecological problem.

Awards Won:
Second Award of $2,000