Using Lutjanus campechanus Scales as a Biosorbent to Filter Cu2+, Pb2+, and Cd2+ From Water

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In recent years heavy metals have become an environmental concern across the U.S. Metals found in waterways lead to the need for efficient and cost-effective removal methods from drinking water. Some dangerous heavy metals in water are copper (Cu2+), lead (Pb2+), and cadmium (Cd2+). This project determined if red snapper fish scales could be used to reduce Cu2+, Pb2+, and Cd2+ in water samples. In phase one, 0.025 M, 0.05 M, and 0.10 M solutions of each metal were prepared. Solutions were then distributed into flasks, 1g of red snapper scales were added, and the flasks were shaken on ONiLAB Digital Orbital Shaker. The metals were precipitated and massed. In phase two, 0.05 M concentration of each metal was prepared and distributed into flasks. 0.5g, 1.0g, and 2.0g of red snapper scales were added, the flasks were shaken, and the metals were precipitated and massed. The hypotheses were that the 0.025 M and 0.05 M concentrations would present with a reduction in metal mass and treatment with 1.0g and 2.0g of red snapper scales would result in a reduction. It was determined that 0.025 M and 0.05 M concentrations and 1.0g and 2.0g of red snapper scales for all metals had a significant reduction. In phase one, the concentration of 0.10 M Pb(NO3)2 had a significant reduction. In phase two 0.5g Cu(NO3)2 had a significant reduction.

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