Filtration of Copper-Contaminated Water Using Crescentia cujete's Shell Based Activated Carbon

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Industrialization and urban stressors have accelerated the increasing levels of the most dangerous contaminants in our water bodies, heavy metals, because of their non-biodegradability, their high toxicity, and their harmful effects in organisms' health (Reyes-Toriz, 2006). WHO (World Health Organization, 2004) and EPA (U.S. Environmental Protection Agency, 1987) consider copper as a dangerous heavy metal if long term exposed. The aim of this investigation was to contribute with an effective way to improve water pollution in developing countries demonstrating the potential filtering capacity of the Crescentia cujete's shell converted into activated carbon; a fruit native to the Caribbean, Central and South America but introduced into countries belonging the intertropical areas of the world. In order to do demonstrate its efficiency, concentrated solutions of Copper(II) Sulfate 5-Hydrate were processed through four different ratios of the activated carbon created. The results showed that just 0.6 grams of activated carbon retained more than the 65% of copper ions from the aqueous solutions in every sample. Based on this data, the researcher concluded that this biomaterial should be used as an effective adsorbent because of its metal removing performance, economic value, its reduction of waste disposal and will provide an inexpensive alternative to commercial activated carbons.

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