Leading the Environment with Less Heavy Metals

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This study aimed to examine the effectiveness of Melia azedarach fruits on removing heavy metals from industrial wastewater .The study methodology contained four steps. First, Melia azedarach fruit were prepared. They were collected, then they were washed by ethanol several times and then by water. After that, they were dried in the oven, then, the dried fruit was taken and grinded into powder (micrometre μm). Second, batch method was processed, where one gram of the powder was taken and placed in different solutions with different concentrations of heavy metals. These solutions were tested using Atomic Emission Spectroscopy (ICP-AES) at different times. This test will calculate the percentage removal of heavy metals before and after using Melia azedarach powder. Third, column process was operated, where Melia azedarach fruit powder was put. Cotton was placed at the bottom, and then the Melia azedarach fruit powder was placed. At the top of the column filter paper was placed. A synthetic solution of heavy metals was passed through the column and the outlet was tested using Atomic Emission Spectroscopy (ICP-AES).Finally, a prototype was designed, containing two stages of purification for the best results. The final outlet was clean healthy water that has many uses including planting. The results showed a minimum of 92% removal of heavy metals, and differed from one heavy metal to another. Moreover, there was a statistically moderate direct relationship between the time and the percentage removal. Also, there was a statistically direct relationship between the concentration of the heavy metals and the percentage removal. We conclude that the Melia azedarach fruit was effective in removing heavy metals from wastewater and producing clean healthy water for different uses.

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