Moringa oleifera Seeds: A Solution to Eutrophication in Rivers and Lakes

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Eutrophication is a process triggered by the enrichment of the aquatic environment with nitrogen and phosphorus nutrients - both descendent of human effluents and agricultural activities. Due to this process, an accelerated proliferation of algae such as Eichhornia Crassipes and Pistia stratiotes, occurs on the water surface. This propagation causes the outbreak of cyanobacteria, that releases toxins, and a biological dispute over oxygen between aerobic bacteria and fish, which causes the death of fish. The purpose of this project is to study the potential of Moringa oleifera seeds in removing phosphates and nitrates from water using the processes of coagulation, flocculation, and decanting. Initially the crushed Moringa oleifera were sealed in non-woven sachets of 10x10, 15x15 and 20x20 cm sizes along with 50,100 e 200g of the seed's extract. Later, the seeds were inserted and agitated inside test tubes of 100, 300 and 500mL that contained distilled water and concentrations of 4, 8, 12, 16 and 20 mg/L of nitrate and phosphate. The analyses conducted in a spectrophotometer concluded that 75.66% of phosphate and 74.42% of nitrate decreased in the water samples. These studies led to the first prototype of Bolmoringa - a big sachet filled with 500g of Moringa oleifera seeds' extract with a production cost of USD 1.04. The sachets are planned to be used in lakes and rivers in the process of eutrophication by inserting them in propellers of pedal boats and ships. Their movements will promote the effective treatment of water, guaranteeing the assurance of aquatic life. The study of the implementation in the Lake of Roses in Goiânia/Goiás, showed that a period of 8 months will clean 40% of the lake water.

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