

## The Use Of *Moringa Oleifera* Seed As A Natural Coagulant For Wastewater Treatment And Heavy Metals Removal.

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### ABSTRACT

*Moringa oleifera* is a multipurpose tree of considerable potential and its cultivation is currently being actively promoted in many developing countries. The various uses and products of the tree are given. Seeds of this pan tropical tree contain water soluble, positively charged proteins that act as an effective coagulant for water and wastewater treatment. Water quality of Gebeng River (GR) was examined before and after the treatment. The preliminary laboratory results showed great potential of MO seed in the wastewater treatment applications. MO seed oil was extracted using ethanol up to 12.78% yield. MO seed has exhibited high efficiency in the reducing and preventing the bacterial growth in both Wastewater (WW) and Gebeng River (GR) samples. The turbidity was removed up to 85-94 % and dissolved oxygen (DO) was improved from  $2.58 \pm 0.01$  to  $4.00 \pm 0.00$  mg/L. The chemical oxygen demand (COD) and biological oxygen demand (BOD) were increased after the treatment from  $99.5 \pm 0.71$  to  $164.0 \pm 2.83$  mg/L for COD and from  $48.00 \pm 0.42$  to  $76.65 \pm 2.33$  mg/L for BOD. Nevertheless, there was no significant alteration of pH, conductivity, salinity and total dissolved solid (TDS) after the treatment. Heavy metals such as Fe were fully eliminated whereas Cu and Cd were successfully removed up to 98%. The reduction of Pb also has been achieved up to 78.1%. Overall, 1% of MO seed cake was enough to curtail heavy metals from the water samples.

**KEYWORDS:** *Moringa oleifera*, Wastewater treatment, Dissolve oxygen, Turbidity, TDS, Heavy metal removal, Antibacterial assay