



Experimental study of unsafe drinking water treatment with *Moringa oleifera* oilcake by coagulation flocculation and filtration

Kaboré Aminata^{1*}, Savadogo Boubacar², Zongo Inoussa³, Sawadogo Jacques¹, Savadogo W. Paul¹, Nombéré Ivette Nina⁴

¹Institut de l'Environnement et de Recherches Agricoles, 04 BP 8645, Burkina Faso

²Institut de Recherché en Sciences de la Santé, 03 BP 7192, Ouagadougou, Burkina Faso

³Institut de Recherche en Sciences Appliquées et Technologies, 03 BP 7047, Burkina Faso

⁴ONG Eau et Assainissement pour l'Afrique, 03 BP 7112 Ouagadougou 03 Burkina Faso,

* Corresponding author: kab.amina@yahoo.fr Tel: +226 70 38 56 99

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ABSTRACT

Objectives: This study aimed to develop a treatment process, which improves the organoleptic and microbiological qualities of drinking water treated by coagulation flocculation with *Moringa oleifera* seeds.

Methodology and Results: *Moringa oleifera* oilcake was used for coagulation flocculation. To treat water with turbidity 51.2 to 1142.9 NTU, 600 mg/L to 2g/L of coagulant were used. Sand filtration was carried out to remove the residual organic matter and microbes in water after the coagulation flocculation. With this method, 93.43 to 99.87% of turbidity was removed versus 37.38% to 93.43% for water treated only by coagulation flocculation. After coagulation flocculation 61.9 to 85.18% of faecal coliforms, 61.18 to 100% of *E. coli* and 69.88 100% of faecal streptococci were removed versus 100% of all faecal bacteria after filtration.

Conclusion and application of findings: The sand filtration combined to coagulation flocculation with *Moringa oleifera* oilcake removed the turbidity and faecal bacteria in water and provide drinking water conform to WHO standards. Furthermore, this method provided water except for bad taste and smell. In view of these results, a household treatment process adapted to the socio-economic conditions of rural populations should be formulated to popularise this technology of drinking water treatment. *Moringa* seeds, sand and shea charcoal are available and easy to get to rural population. The process is also fast and easy to implement in the households.

Keywords: Drinking water, *Moringa oleifera*, treatment, physical chemistry, microbiology.