Application of Hibiscus L. Seeds in Domestic Water Treatment

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Due to the difficulty faced by many rural communities in the developing countries to access clean drinking water for their domestic needs, and the corresponding health threat on the life of many school age children, the most cost effective and the most viable option available in the absence of modern technologies is to adopt simple 'Point Of Use' (POU) technologies such as coagulation and flocculation to treat household/community water with natural materials available in a particular area.

This research work uses a batch test on jar tester to investigate the efficiency of Hibiscus malvaceae family natural plant and Moringa oleifera in terms of turbidity removal, and compare the results with that of alum used in water purification.

The efficiency of the crude seed powder, crude seed extract and the purified extract will be examined using different solvent extractants, such as water, ethanol, hexane etc. The application of the precipitated mucilage of okra (polysaccharide) will also be examined. The targeted coagulating agents are the proteins and the polysaccharide compounds of the seeds.

Investigation into the efficacy of the blended coagulants/flocculants optimum doses of each material with alum will be studied in order to ascertain possible cost savings that could be achieved, which will at the end help reduce the cost of importing chemicals in the developing countries. Figures 1 shows seeds of the various plants.

Fig. 1. Hibiscus esculentus (Okra) seeds, Hibiscus cannabinus (Kenaf) seeds, Hibiscus sabdariffa (Roselle) seeds

It is anticipated that this research work will deliver a simple, cost effective, environmentally friendly, biodegradable and viable water treatment method for developing countries, so addressing a key water-related challenges faced by rural communities.