WATER MELON SEED AS A POTENTIAL COAGULANT FOR WATER TREATMENT

ABSTRACT

Water is used for several purposes by humans but the level of purity of the water being consumed is very crucial since it has a direct effect on health. Safe drinking water should generally be free from heavy metals, turbidity, organic compounds and pathogen. Conventional treatments of water often include sedimentation, filtration and disinfection. Among the coagulating agents used in water treatment, ferric sulphate or alum (aluminium sulphate) is some of the most widely used salts. Aluminium is strongly neurotoxic and may be involved in the development of Alzheimer’s disease, known fact that most of the chemical disinfectants used for antibacterial activity generate various unwanted chemicals known as disinfection by products (DBPs) in water.

This paper reports the potential of watermelon seed as a natural coagulant for water treatment. It was aimed at identifying watermelon seed as a possible replacement for alum and other synthetic polyelectrolytes in treating water. In present study various doses of watermelon seed powder like 0.1, 0.2 to 0.6g /l were taken and checked for the efficiency dose on raw groundwater. After treatment of water samples with watermelon seed powder were analyzed for different parameter like pH, turbidity, TDS, TS, hardness, chlorides, alkalinity, acidity.

KEYWORDS: water melon, seed, coagulant, turbidity, colour, water treatment.
INTRODUCTION:

Water supply is a basic need required for living creatures and human being specifically. Developing countries and third world countries are facing potable water supply problems because of inadequate financial resources. The cost of water treatment is increasing and the quality of river water is not stable due to suspended and colloidal particle load caused by land development and high storm runoff during the rainy seasons. During the rainy seasons the turbidity level increases and the need for water treatment chemicals increase as well, which leads to high cost of treatment which the water treatment companies cannot sustain. As a result, the drinking water that reaches the consumer is not properly treated (Muyibi et al., 2009). Therefore, it is of great importance to find a natural alternative for water coagulant to treat the turbidity. In this world the amount of resources available to living creatures are limited. Safe drinking water is essential to the health and welfare of a community, and water from all sources must have some form of purification before consumption.

Drinking water treatment involves a number of combined processes based on the quality of the water source such as turbidity, amount of microbial load present in water and the others include cost and availability of chemicals in achieving desired level of treatment (Muyibi et al., 2009). Conventional methods used for purification of water include coagulation, sedimentation, filtration, aeration and also chemical treatment.

This paper aimed at investigating the potential of watermelon seed as a coagulant for water treatment. This material was selected because the watermelon seed has high protein content and some authors have considered that the active coagulant agents in plant extract are proteins. The objective of this study is to determine the potential of watermelon seed as a natural coagulant, and investigate the coagulation characteristics of its crude protein extracts.
OBJECTIVE:

The main objective of this study is to confirm the effectiveness of powder processed from watermelon seeds as water coagulant.

ADVANTAGES:

- It is ecofriendly and cheaper method of water treatment.
- Watermelon seeds can be used in the rural areas where no facilities are available for the drinking water treatment.
- After the treatment the sludge settled at the bottom of tank, can be used as bio-fertilizers is an added advantage of this method in rural areas.
APPLICATION:

- Household and Community Level water treatment units.
- Treatment Unit operations and processes.
- Existing conventional water treatment plants with slight modifications.
- New water treatment plants.
- Use processed watermelon seed from medium technology or high technology.
- Provide manual of operation for dosing, filter maintenance etc.