

Determination of Effectiveness of Traditional Drinking Water Treatment Methods.(2017)

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Abstract:

This study surveyed the effectiveness of Green gram seed (GGS) powder, Moringa seed (MS) powder, Bean pod (BP) ash, Pea nut stalk (PNS) ash, Ceramic filter (CF), Sand filter (SF), boiling and cloth filtration treatment methods as alternatives to conventional water treatment for households. GGS and MS were grounded to obtain fine powder. BP and PNS were burnt to obtain the ash. Two (2) grams of grounded powder and ashes was mixed with 500ml of sample water in a bottle, shaken for about 15 seconds and allowed to settle for 2 hours before testing. Raw water filtrate from a CF and a clean sterile cotton cloth was collected separately and tested. Boiling was done for 1hr at 1000C, and allowed to cool before testing. The SF was made from graded sand. Raw water was passed through it, and the filtrate collected and stored in a refrigerator. The pH, colour, conductivity, Turbidity, TDS, Total and Fecal coliform parameters were used to monitor the efficiency of the treatment methods. The results show that GGS powder, MS powder, PNS ash and CF removed colour and turbidity effectively from highly turbid water. Boiling and CF removed total and fecal coliform 100% from all types of raw water. BP ash, CF, boiling, and cloth filter were quite effective in removing fecal coliform in water samples with low turbidity. BP ash, CF, and boiling were very effective in removing total and fecal coliform from borehole and tap water. BP ash treatment was not effective in Pond water and Tana River water samples. The most effective treatment method was Ceramic Filter (CF) when used in low turbidity water. The order of effectiveness in descending order therefore is, CF, Boiling, MS powder, GGS powder, Cloth filter, SF, BP ash and PNS ash.

Keywords: Water treatment; Green Gram seeds, Moringa seeds, Bean pod, Ceramic filter, boiling, Cloth filtration

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