

**EFFECTIVENESS OF LOCAL PLANT MATERIALS  
AS NATURAL COAGULANTS IN TREATING TURBID WATER**

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In general, polyaluminium chloride (PAC) and Alum are used to reduce the turbidity of water in water treatment plants. As an alternative, natural coagulants are being tested as those are biodegradable and safe for human health. An attempt was made to test the locally available five different plant species as natural coagulants. Water samples for this experiment were collected from *Nuwara wewa* water treatment plant. Turbidity of the water was initially increased by adding mud samples taken from *Nuwara wewa*. These water samples were treated separately by 50 ppm to 100 ppm of PAC as a control, and powdered Moringa (*Moringa oleifera*), *Arjun* (*Terminalia arjuna*), Jack fruit (*Artocarpus heterophyllus*), Clearing nut (*Strychnos potatorum* L.) seeds and Aloe (*Aloe vera*) as treatments. Turbidity, pH, and electrical conductivity were measured before and after the treatments. The experiments were conducted as a full nested design to test the effect of coagulant variety and concentration on the turbidity removal efficiency of water samples with a mean comparison using Turkey's Studentized Range Test at 0.05 significant level. The results demonstrated that there are significant differences ( $p < 0.05$ ) of selected natural coagulants on removing the turbidity of water. Accordingly, Moringa showed the highest turbidity removal efficiency of 84.8 ( $\pm 8.9$ ) %. *Arjun* and Aloe demonstrated turbidity removal efficiency of 42.6 ( $\pm 6.71$ ) %, and 34.9 ( $\pm 6.03$ ) %, respectively and it was significantly ( $p < 0.05$ ) higher than those of Jack fruit 18.2 ( $\pm 9.3$ ) % and Clearing nut 30.4 ( $\pm 23.7$ ) %. However, only PAC reduced 99.3 ( $\pm 0.04$ ) % of the turbidity of the water. This study concludes that among natural coagulants tested, Moringa has the highest capability of removing the turbidity of water. Further studies combining these natural coagulants and PAC are suggested to test in treating turbid water.

**Keywords:** Natural coagulants, Turbidity, Water treatment plant, Polyaluminium chloride