EFFECTIVENESS OF COAGULANT AND DISINFECTANT ON WATER TREATMENT IN EAST NUSA TENGGARA

Muhammad Ardiansyah Nurawi, Marylin Susanti Junias, Ketut Mahendira Kuswara
Masters Program in Public Health, Universitas Nusa Cendana

ABSTRACT

**Background:** District local water department acquire, maintain, operate, and distribute water supply for domestic, industrial, municipal, and agricultural uses. The safe quality of water supplied to communities is an important consideration in the protection of human health and well-being. The parameters recommended by World Health Organization (WHO) for the minimum monitoring of community water supplies were total E. coli, chlorine residual, pH, and turbidity level. Chlorine can be easily monitored and controlled as a drinking-water disinfectant. This study aimed to examine the effectiveness of coagulant and disinfectant on water treatment in East Nusa Tenggara.

**Subjects and Method:** A randomized controlled trial was carried out in district local water department (PDAM) in Kupang, East Nusa Tenggara. This study used 2 groups of treatment included (1) 100 kg Alum and 30 kg chlorine; and (2) 200 kg Alum and 15 kg chlorine. The dependent variable was turbidity level, chlorine residual, and total Coliform bacteria. The independent variables were dosage of Alum and chlorine addition. Turbidity level was measured by turbidity meter. Chlorine residual was measured by chlorine meter. Total Coliform bacteria were measured by Brilliant green lactose broth (BGLB) medium. An inoculation loop of a positive sample from lactose broth has been isolated and separated. BGLB was carried out aseptically and incubated at 37°C for 2x24 hours. Turbidity level, chlorine residual, and total Coliform bacteria between groups were analyzed by t-test.

**Results:** Turbidity level, chlorine residual, and total Coliform bacteria in the 100 kg Alum and 30 kg chlorine group (mean= 66.14; SD= 6.44) was lower than the 200 kg Alum and 15 kg chlorine group (mean= 86.57; SD= 4.20), and it was statistically significant (p<0.001).

**Conclusion:** Turbidity level, chlorine residual, and total Coliform bacteria in the 100 kg Alum and 30 kg chlorine group is lower than the 200 kg Alum and 15 kg chlorine group.

**Keywords:** turbidity, chlorine residual, Alum, total Coliform bacteria

**Correspondence:**