

ABSTRACT

Water pollution is one of the most pressing environmental issues worldwide, largely due to industrial, agricultural, and domestic waste. Conventional filtration methods are costly and less environmentally friendly. This study investigates the effectiveness of a biofilter based on *Ganoderma lucidum* (Reishi mushroom) combined with sawdust, rice husks, gravel, and fine sand to improve water quality. The research was conducted using an experimental method by filtering polluted water from the Ciliwung River at two locations: Jakarta Pusat and Depok. The biofilter media were prepared in three variations with different concentrations of Reishi mushroom: 100g, 50g, and 25g. Water quality parameters measured included pH, Total Dissolved Solids (TDS), turbidity, and iron (Fe) content before and after filtration. The results showed that the 100g Reishi mushroom biofilter was the most effective, reducing pH from 7.7 to 7.1, TDS from 320 mg/L to 180 mg/L, turbidity from 45 NTU to 14 NTU, and Fe from 0.65 mg/L to 0.18 mg/L. The effectiveness of the biofilter decreased slightly over four weeks due to particle accumulation but remained more stable compared to lower concentrations. This study concludes that a biofilter based on *Ganoderma lucidum* effectively improves water quality by reducing acidity, dissolved solids, turbidity, and heavy metal content. This environmentally friendly and cost-effective method offers an alternative to conventional filtration systems and holds potential for application in household and industrial wastewater treatment.

Keywords: Biofilter, *Ganoderma lucidum*, Water quality, Filtration, Wastewater treatment