Evaluating the Antimicrobial Properties of Materials in Kenya

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Kenya’s third leading cause of death is diarrheal diseases that are contracted through contact with E.coli contaminated surfaces. The purpose of the experiment was to find a material that is naturally found and easily accessible to all socioeconomic groups in Kenya and has the ability to control microbial growth and minimize microbial transmission in infrastructure. Prior to the experiment, laterite clay was assumed to have the greatest inhibitory effect on E.coli K12 because of its high composition of aluminum oxide, an antimicrobial compound. Disk diffusion assays were conducted to determine the effectiveness of each material’s antimicrobial properties against E.coli K12. No inhibitory ring was clearly defined around filter paper, the negative control variable, and bamboo, which was observed to promote bacterial growth. The inhibitory ring around cedar wood of 29.1mm rivaled bleach’s, the positive control, with an inhibitory ring of 45mm, followed by pine wood, bentonite, and laterite clay. To determine the feasibility of cedar wood under household conditions, further research was completed on cedar’s antimicrobial properties under various conditions. In each condition, cedar’s inhibitory effect was less than normal conditions; however, it remained significantly greater than other materials, demonstrated through the non-overlapping 2SEM bars. The experimental results did not support the hypothesis and concluded that cedar wood has the greatest antimicrobial properties out of the materials tested, possibly because of natural wooden extractives and hygroscopic properties. Cedar’s feasibility in typical conditions, accessibility, and antimicrobial properties make it ideal to implement into Kenyan infrastructure.

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