

Antibacterial Test of The Essential Oil Fractions of Citronella (*Cymbopogon nardus* L.) Against *Escherichia coli* and Application as Hand Sanitizer Formulation

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Abstract	<p>ABSTRACT. Hand sanitizer is an essential item during the COVID-19 pandemic, posing potential side effects when containing synthetic ingredients. Therefore, this study aimed to replace hand sanitizer formulation with Citronella essential oil (<i>Cymbopogon nardus</i> L.). Essential oil was fractioned into 3 components, namely F1 (67.07% of limonene), F2 (92.39% of citronellal), and F3 (62.41% of geraniol) while evaluation was conducted on antibacterial properties against <i>E. coli</i>. Antibacterial test was performed using the well diffusion method, showing inhibition zone diameters of 7.40, 10.76, and 8.30 mm for F1 to F3 fractions, respectively. The results showed that F2, selected as the reference for hand sanitizer formulation, had the most potential antibacterial activity and a MIC of 3.125%. Comparative test with commercial alternatives, including hedonic, characteristic, and antibacterial activity test, were conducted to assess the formulated hand sanitizer. F2 was discovered to have an inhibition zone diameter of 29.56 mm as opposed to 9.06 mm of commercial hand sanitizer. Based on hedonic test, hand sanitizer formulated with citronella oil had a distinct smell, which was less preferred than lime fragrance. Keywords: Antibacterial, <i>Escherichia coli</i>, and sanitizer, citronella essential oil.</p>
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Author	Dr. UNDRI RASTUTI, S.Si, M.Si