In-Vitro Investigation of Antimicrobial Effect of Bark Root Extracts of Solanum Incanum and Croton Macrostachyus

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Research article

Keywords: Antibacterial, C. macrostachyus extract, E. coli, S. incanum extract, Solvents, S. 43 aureus

Posted Date: October 12th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-88900/v1>

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Abstract

Background: The increasing antibiotic resistance exhibited by pathogenic microbial infectious agents has led to the screening of several medicinal plants for their potential antimicrobial activity. An in vitro experimental investigation was conducted with the aim to evaluate antibacterial effect of bark root extracts of *S. incanum* and *C. macrostachyus* against *S. aureus* and *E. coli*. It was experimental study from January 2019 to November 2019 in Jimma University. The crude extracts of *S. incanum* and *C. macrostachyus* were done using petroleum ether, ethanol and distilled water by maceration methods. The antibacterial activity tests were assessed using agar well diffusion and minimum inhibition concentration methods.

Results: *C. macrostachyus* bark root ethanol extracts have shown an antibacterial effect against *E. coli* and *S. aureus* with maximum mean zone of inhibition of 15 ± 0.58 mm and 17.33 ± 0.89 mm respectively. In case of *S. incanum* it is also the ethanol extract that showed highest mean zone of inhibition of 22.67 ± 0.89 mm and 22.33 ± 0.89 mm against *E. coli* and *S. aureus* respectively. The positive control Gentamicin ($10 \mu\text{g}/\text{disc}$) inhibited the growth of *E. coli* and *S. aureus* with recorded mean zone of inhibition about 23 ± 0.58 mm and 24.67 ± 0.33 mm respectively. Therefore the ethanol extract of *Croton macrostachyus* and *S. incanum* showed minimum inhibitor concentration against *S. aureus* and *E. coli* than other solvents.

Conclusion: Bioactive compounds of medicinal plant extracts have been used to overcome the challenges of antimicrobial resistance. The current experimental study showed that, the bark root extract of *Solanum incanum* and *Croton macrostachyus* have high potent of antibacterial activities against *E. coli* and *S. aureus*. This study therefore substantiates the use of *Solanum incanum* and *Croton macrostachyus* as an antimicrobial medicinal plant.

Full Text

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Figures

Figure 1

medicinal plants used during the study period; A and B: *Croton macrostachyus* with its root; C and D: *Solanum incanum* and its root